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THE OBSTETRICAL QUIZ FOR NURSES

A MONOGRAPH ON OBSTETRICS

FOR THE

GRADUATE AND THE UNDER-GRADUATE NURSE IN
THE LYING-IN-ROOM

BY

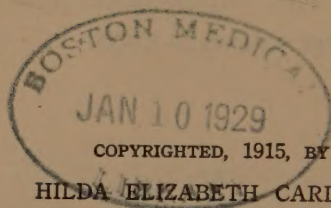
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DEDICATED
TO
THE FAITHFUL SERVICE OF
OBSTETRICAL NURSES
BY
THE AUTHOR

PREFACE

THIS monograph has been prepared to aid the pupil and the graduate nurse in the essentials of the science and art of obstetrics. The author has not spared time nor labor in order to make it complete and comprehensible in its scope and character, so that it may prove invaluable in the lying-in room, both in the hospital and during private nursing.

The compilation of the work has required several years, and it has afforded the writer keen pleasure. Its chief aim is to increase not only interest, but to create a greater love for this separate branch of nursing. It is hoped, also, that those who instruct the pupil nurse in the class and lecture-room will find valuable suggestions in this monograph.

There are many obstetrical text-books on general nursing, and innumerable quiz compends for medical students, but as yet there has not appeared a quiz compend on obstetrics for nurses. This book has been specially compiled and classified to cover briefly the entire subject of pregnancy, labor, puerperium, complications, treatment in emergency, and the general care of the patient; care, treatment and feeding of the normal and premature infant. Chapters on dietary and antiseptic solutions required by the obstetrical nurse are also included.

The essential feature of this work consists in a description for improvising everything required on an emergency case, outside of the maternity. The nurse

is too often hindered and embarrassed in private practice for lack of requisite appliances and utensils, due to the unexpected conditions which arise in many stricken households; or to her own inexperience outside of the hospital, where she has been accustomed to having access to aseptic supplies and utensils. It is hoped that the work will fill a place as a handy reference for the nurse during private duty.

The writer is indebted to the following authoritative authors' works for reference, citations, and inspiration: Dr. Adam H. Wright's *Text-Book of Obstetrics*; Dr. Joseph B. DeLee's *Principles and Practice of Obstetrics*; Dr. A. F. A. King's *Manual of Obstetrics*; and various quiz compends, including Dr. W. E. Ashton's *Essentials of Obstetrics*, and Dr. Charles B. de Nancrede's *Essentials of Anatomy*, etc. The following works on nursing includes Diana C. Kimber's *Anatomy and Physiology for Nurses*; Emily A. M. Stoney's *Practical Points in Nursing*; Dr. Joseph B. DeLee's *Obstetrics for Nurses*; Dr. Joseph B. Cooke's *Nurse's Handbook of Obstetrics*; Dr. Robert S. McCombes's *Diseases of Children for Nurses*; Dr. L. Emmett Holt's *Care and Feeding of Children*; and *Infancy and Childhood*; Dr. Herbert S. Carter's *Diet Lists*; Amy E. Pope's and Thirza A. Pope's *Quiz Book of Nursing, for Teachers and Students*, and Amanda K. Beck's *Reference Handbook for Nurses*, etc.

I extend my hearty appreciation for all suggestions and aid received from both physicians and nurses who have encouraged me in the compilation of this work.

HILDA ELIZABETH CARLSON.

New York City.

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THE OBSTETRICAL QUIZ FOR NURSES

CHAPTER I

ANATOMY AND PHYSIOLOGY OF THE REPRODUCTIVE SYSTEM

Obstetrics

Define the science and art of obstetrics.

The science of obstetrics consists of the classified knowledge of the laws of human reproduction; and the art includes the rules formed by intelligent experience, which govern the care of a woman during pregnancy, labor, and the puerperium.

ANATOMY

What is the pelvis?

The pelvis is that portion of the skeleton located between the trunk and the lower extremities.

What bones form the pelvis?

The pelvis consists of four bones: two ossa innominate, the sacrum, and the coccyx.

Name the divisions of the ossa innominate bones.

Each innominate bone is divided into three parts: the ilium, ischium, and os pubis.

Describe the ilium.

The ilium is the broad, flat, upper portion of the innominate bones.

Describe the ischium.

The ischium is the lower, posterior portion of the innominate bones.

Describe the os pubis.

The os pubis is the anterior portion of the innominate bones.

What is the union of the two innominate bones called?

The symphysis.

Describe the sacrum.

The sacrum is a triangular bone formed by the fusion of the five sacral vertebræ. It is wedged between the ossa innominate bones forming the back of the pelvis, and articulates above with the spinal column, and below with the coccyx.

Describe the coccyx.

It is a small triangular bone in appearance, resembling a miniature sacrum, and forms the extremity of the spine.

How is the pelvis divided?

The pelvis is divided into cavities: the upper, greater, or false pelvis; and the lower, smaller, or true pelvis.

What is the line called which divides the true from the false pelvis?

Where the true and the false pelvis join there is a more or less prominent line—the ilio-pectineal line—called the inlet, brim, or superior strait. The cavity above the brim is the false pelvis, and the cavity below the brim is the true pelvis.

Describe the shape of the inlet.

It is more or less heart-shaped; pointed in front, while behind it is encroached upon by the promontory of the sacrum.

Describe the false pelvis.

It resembles a flat funnel, formed by the flaring innominate bones on the sides, which is completed in front by the abdominal muscles, and in the back by the spinal column above the sacrum.

What is the function of the false pelvis?

Its function consists in directing bodies in the abdomen down into the true pelvis.

Describe the true pelvis.

The true pelvis is the cavity below the brim, and it is formed in the back by the sacrum and the coccyx; on the sides, and in front by the two innominate bones. The pelvis in front is two inches high, while at the back it is six inches high. The bony structure of the pelvis is irregular, and contains several openings, through which various muscles, nerves, and blood-vessels pass.

What is the lower part of the true pelvis called?

The outlet, and its shape resembles that of two triangles joined by a common base.

Name the joints of the pelvis which are of obstetrical importance.

The symphysis pubis, two sacro-iliac synchondroses, and the sacro-coccygeal articulation.

What changes take place in the pelvis joints during pregnancy?

The ligaments become elongated and swollen; the fibro-cartilage becomes thickened and softens; and there

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is a slight separation between the bones—especially marked in the symphysis pubis.

Describe the pelvis as a whole.

The pelvis may be described as a deep, funnel-shaped basin without a bottom. It is set into the body in such a way that part of the weight of the abdominal viscera are borne by the abdominal wall and the pubis.

What is the difference between the female and the male pelvis?

The female pelvis is shallower, wider, less funnel-shaped, smoother, lighter in structure; and the diameters of the inlet are greater than in the male pelvis.

Why should the pelvis of a pregnant woman be measured at a sufficiently early date?

In order that the physician may observe any slight pelvic contractions, or marked deformities, which would enable him to determine the proper course to pursue at birth.

Describe the soft parts of the pelvis.

The pelvis is lined with soft tissues. The false pelvis is lined with muscles, and completed in front by the abdominal muscles. The true pelvis is lined with a few muscles, but has various important organs, vessels, nerves, etc.

Describe the peritoneum.

It is a serous membrane, which lines the abdominal wall and covers the various organs.

What is the pelvic floor?

It consists of a thick, elastic layer of muscles, dovetailed or overlapped all around the bony pelvic outlet.

*Internal Organs of Generation***What are the internal organs of generation?**

The internal organs of generation are: the vagina, uterus, Fallopian tubes, and ovaries.

Define the location of the viscera about the uterus.

In front of the uterus lies the bladder; behind, on the left side, is the rectum, and above the uterus is located the small intestine.

Describe the urethra.

The urethra is a membranous canal leading from the bladder to the external surface of the body. It is about one and one-half inch in length, and about the diameter of a lead pencil. It is slightly curved, and is located in front of the vagina, just back of and slightly below the pubis.

Describe the vagina.

The vagina is a curved, muscular, membranous canal, five to six inches in length, which extends from the cervix of the uterus to the vulva. It is located within the true pelvis, between the bladder and the rectum, and it forms the communication between the external and the internal organs of generation.

Describe the uterus, or womb.

The uterus, or womb, is a hollow, pear-shaped organ, about three inches in length, and weighs about two, to two and one-half ounces. It is composed of muscular tissue, and is covered externally with peritoneum, and internally with mucous membrane. The uterus is suspended in the pelvis by the broad ligaments, from the wall of the pelvis, in such a way as to permit of its

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enormous enlargement during pregnancy—from the size of an egg, to that of a fairly large pumpkin, at the time of labor. It is located nearly in the center of the pelvis, below the brim, behind the bladder, and in front of the rectum.

How many layers compose the uterine wall?

The wall of the uterus is composed of three layers: the peritoneal, the muscular, and the mucous layer.

Describe the peritoneal layer.

The peritoneum, a serous membrane, passes from the bladder and covers the anterior and posterior uterus externally.

Describe the muscular layer.

The muscular layer constitutes the body of the uterus; and is composed of smooth, muscular fibers, interspaced with blood-vessels, lymphatics, nerves, etc. It is one-half of an inch in thickness.

Describe the mucous layer.

It is the mucous membrane lining the interior of the uterus, which is ordinarily about one-thirteenth to one-fifteenth of an inch in thickness. The membrane gradually increases in thickness from the end of one menstrual period to the next, when it is eroded.

How is the uterus divided?

The uterus is divided into three parts: the fundus, the body, and the cervix.

Describe the three parts of the uterus?

The fundus is the upper or superior part of the uterus; the cervix is the neck, and the body is that portion between the fundus and the cervix.

How is the cavity of the uterus divided?

The cavity is divided into two parts: the cavity of the body, and the cavity of the cervix. Both cavities are lined with mucous membrane.

Describe the cavity of the body.

The cavity of the body is small and irregular in shape, and has three openings. Two of the openings are located at the upper angles of the body, and lead into the Fallopian tubes; the third opening is located in the inferior or lower angle of the body, and constitutes the small entrance into the cavity of the cervix, called the os internum.

Describe the cavity of the cervix.

It consists of a slightly distended cavity located above the external os, and it becomes contracted again at its junction with that of the body. The second contraction constitutes the internal os, and it is due to these two points of contraction that the cavity of the cervix becomes spindle-shaped.

Describe the broad ligaments.

The broad ligaments are composed of folds of peritoneum, which cover the anterior and the posterior walls of the uterus, and also stretch to the side walls of the pelvis. The peritoneum in front is reflected over the posterior wall of the bladder; and in back, over the anterior wall of the rectum.

Describe the Fallopian tubes, or oviducts.

The Fallopian tubes, or oviducts, consist of two trumpet-shaped tubes, about four inches in length. They are located—one on each side of the uterus, and extend from the upper angles of the uterus, between the

folds of the broad ligaments. The tubes, or ducts, gradually increase in size as they leave the uterus, and terminate in dilated, funnel-shaped ends, fringed with delicate streamers, called fimbriæ. There is a direct opening from the outside to the peritoneal cavity through the vulva, vagina, uterus, and the Fallopian tubes.

What is the function of the Fallopian tubes?

The function of the Fallopian tubes consists of conveying the ova from the ovaries into the uterus.

Describe the ovaries.

The ovaries are the female germ-producing organs. They consist of two small oval bodies, about one and a half inch in length, similar in size and shape to an almond. The ovaries are located, one on each side of the uterus below the Fallopian tubes, and they are enclosed between the anterior and posterior folds of the broad ligaments. Each ovary at birth contains, in its substance, vast numbers of germs or ova. Beginning at the age of puberty, and continuing during the child-bearing period, the ova are maturing and escaping into the Fallopian tubes and uterus. This occurs more frequently near the menstrual periods.

How are the ovaries connected with the oviducts, or Fallopian tubes?

They are connected by one of the fimbriæ of the Fallopian tubes.

How are the ovaries connected with the uterus?

They are connected by means of the Fallopian tubes and the ligaments of the ovaries to the uterus.

*External Organs of Generation***Name the external organs of generation.**

The external organs constitute the vulva, which consists of the mons veneris, labia majora, labia minora, the clitoris, the urinary meatus, and the vagina.

Describe the mons veneris.

It consists of a cushion composed of adipose fibrous tissue, covered with hair, which is located directly over the symphysis pubis.

Describe the labia majora.

The labia majora, or the greater lips, constitute the two sides of the vulva. They are covered externally with hair, and lined internally with mucous membrane. The greater lips extend from the mons veneris in front to the fourchette behind.

Describe the labia minora, or nymphæ.

The labia minora, or the lesser lips, are located inside of the labia majora, or larger lips, and are covered with mucous membrane. The lesser lips are united anteriorly in the middle line, where they form the prepuce of the clitoris, and posteriorly they disappear at the sides of the outlet of the vagina.

Describe the clitoris.

The clitoris consists of a small, erectile tubercle, which is located about half an inch below the upper anterior junction of the labia majora.

What is the vestibule?

It consists of a triangular surface covered by mucous membrane, which is located below the clitoris, between

the labia minora, and just above the orifice, or entrance to the vagina.

Describe the meatus urinarius.

The meatus urinarius is the external opening, or orifice of the urethra, and is located between the clitoris and the vagina.

What is the hymen?

It consists of a fold of membrane which is located at the entrance of the vagina. Its shape varies in different women. With some the fold of membrane covers the opening of the vagina; with others it partly closes the entrance, while with others there may not be any hymen at all.

What is the fourchette?

It is a fold of mucous membrane, consisting of the posterior commissure of the labia majora.

Describe the perineum.

The perineum is composed of skin, connective tissue, and muscles. It is that part of the pelvic floor which separates the lower extremities of the vagina and the rectum from each other, located between the vulva and the anus. Internally the upper surface of the perineum is formed by the lower vaginal wall, and its posterior surface comes in contact with the rectum where it is covered with skin externally. During labor, as the head passes through the vagina, there is great distention of the perineum. In difficult labor there often occurs a slight laceration, and in some cases the perineum is torn through the anus into the rectum. The latter is a serious laceration, since the patient may lose the control of her bowels.

Describe the perineal body.

The perineal body is a triangular mass of elastic, muscular tissue, which is located in the center of the perineum.

Upon what does the distensibility of the perineum depend?

The perineal body.

*The Breasts***Describe the breasts, or mammary glands.**

The breasts consist of two highly specialized glands. One gland is located on each side of the anterior wall of the chest, between the two layers of the superficial fascia, upon the pectoralis major muscle, between the third and seventh ribs.

The mammary glands are composed of glandular tissue and fat. Each breast is divided into fifteen to twenty lobes, which are separated from each other by connective tissue and fatty walls. These lobes are subdivided into lobules, and each lobule is composed of acini, in which the milk is formed. The canals, or ducts which lead from each of the lobes, are brought together and unite in the nipple, and thus form the excretory ducts of the lobes. Each duct, as it approaches the nipple, dilates and forms a spindle-shaped cavity, called *lactiferous sinus*, which contracts as it enters the nipple.

What is the function of the ducts?

Their function consists in collecting the milk from the acini and conveying it to the nipples.

How is the external surface of the breasts divided?

The external surface of each breast is divided into

three parts: 1. The white, soft and smooth area of the skin through which the blue veins are easily visible, extending from the periphery of the gland to the areola. 2. The areola is that portion which surrounds the nipple, and contains twelve to twenty small nodules, called the tubercles of Montgomery. The areola is of a dark rose color. During gestation the tubercles of Montgomery become more prominent, and the areola grows darker in color. 3. The nipple is a large, conical papilla, which projects from the center of the areola.

What are the functions of the mammary glands, or breasts?

The mammary glands, or breasts, secrete the milk which serves as the nourishment of the infant. They are abundantly supplied with nerves and blood-vessels. An intimate connection between the breast and uterus, through the sympathetic nervous system, is shown when the child is placed at the breast, since it results in reflex uterine contractions, due to stimulation of the nipple.

PHYSIOLOGY

Ovulation

Mention the different parts of the ovaries.

1. The stroma, or the bed, consists of a framework of connective tissue. 2. The Graafian follicles consist of cavities which are dotted about in the stroma, or bed.

What are the Graafian follicles, or ovisacs?

They are small, spherical bodies, or cavities in the ovaries, lined with germinal epithelium, and each containing an ovum, which is a specialized germinal epithelium cell.

What are the functions of the ovaries?

The functions of the ovaries are to produce, develop and discharge the ova.

Describe the ovum.

The human ovum is the female reproductive cell, and is about $\frac{1}{120}$ of an inch in diameter. It is surrounded by a thick membrane, called the vitelline membrane—*zona pellucida*. Within this membrane, or cell-wall, is located the protoplasm, known as the *vitellus*—yolk of the ovum—which contains the germinal vesicle. Within this vesicle is located the nucleolus, or germinative spot.

What is the total number of ova contained in the ovaries at birth?

The ovaries of the new-born female infant contain between 50,000 to 70,000 undeveloped ova.

What is ovulation?

Ovulation is the ripening of an ovum, and its discharge from the ovary.

*Puberty***Define puberty.**

Puberty is the age at which the generative organs become functionally active, and when transformation from childhood to adult takes place.

At what age does puberty usually occur?

Puberty in the female child usually takes place between twelve and fifteen years of age.

What changes occur at puberty?

Externally the breasts develop; the pelvis becomes fuller and broader, and the genitals increase in size, and the vulva is covered with a growth of hair. These

changes are also combined with internal development of the ovaries, tubes, uterus, etc.

What is the relation between ovulation and menstruation?

They are closely related, since the Graafian follicles containing the ova develop very early. These begin to mature at the age of puberty, and are discharged during the menstrual flow, and continue active throughout the entire child-bearing period.

How does the ovum escape into the Fallopian tube?

At the time when ovulation is about to occur the Graafian follicle becomes specially developed. The covering of ovary over the follicle becomes thinned by pressure, and is ruptured, which allows the ovum to escape into the Fallopian tube.

Describe the progress and development of the ovum.

The ovum when once within the Fallopian tube makes its way into the uterus, and later is discharged with the menstrual flow, unless it has been impregnated.

What is the Graafian follicle called after the ovum has escaped?

After the rupture of the Graafian follicle, and the ovum has escaped, it is known as the *corpus luteum*. This is divided into two forms, the true and the false corpus luteum.

What is the true corpus luteum?

It consists of the corpus luteum of pregnancy.

What is the false corpus luteum?

It consists of the corpus luteum—when impregnation of the ovum does not occur.

*Menstruation***What is menstruation?**

Menstruation, known as menses, catamenia, periods, monthly sickness, and courses, consists of a periodical discharge of blood, which is derived from the mucous membrane of the uterus, known as endometrium. Menstruation occurs between puberty and the menopause—that is, between thirteen and about forty-five years of age. The menses recur regularly every twenty-eight days, in the majority of women, although there is considerable variation.

State the menstrual duration.

The average duration is usually three to five days.

What are the symptoms of menstruation?

In well-developed women, not suffering from any disease, there may be no symptoms. In others the symptoms are slight, and may only consist of a sensation of weight and congestion of the pelvis, fullness, and tingling sensation of the breasts. A slight headache and pain in the back are not uncommon symptoms, which appear before and during menstruation.

What is the average amount of blood discharged?

The amount varies from two to five ounces of blood. The menstrual flow is more or less affected by climate, mode of living, etc. Women living an easy, luxurious life in a warm climate are liable to have an excessive menstrual discharge—much greater than women living an active, simple life in a temperate or cool climate.

Describe the character of the menstrual flow.

The blood discharged does not coagulate except when there is an excessive amount of flow, on account of the

presence of the mucous and epithelial débris contained in the discharge.

Menopause

What is the natural cessation of the menstrual periods called?

The menopause, change of life, and climacteric.

When does the menopause, or change of life, occur?

The menopause, or change of life, generally takes place between the ages of forty-five and fifty years. There are exceptions, where it has occurred much earlier as well as much later in life.

What changes take place in the generative organs after the menopause?

The Graafian follicles do not mature, the ovaries become shriveled, the Fallopian tubes atrophy, and the uterus decreases in size, etc.

CHAPTER II

FETAL DEVELOPMENT

What is conception?

It consists of the union of two living elements—the one male and the other female. Conception is accomplished by the union of the male element, spermatozoon, with the ovum, the female element.

What is this union commonly called?

It is known as fertilization, impregnation, fecundation and conception.

Describe the spermatozoa.

The spermatozoa are ejaculated in the semen—a viscid fluid of the male. Each spermatozoon has a head, body and a tail with movements similar to those of an eel. It may live several days in the female genital tract.

Describe impregnation.

The spermatozoon moves up through the uterus and into the tube, where it usually meets and penetrates the ovum. Impregnation probably takes place in the Fallopian tube, the ovum then passing into the cavity of the uterus.

How does segmentation take place?

The interior of the ovum—similar to that of an egg—after impregnation with the spermatozoon, is divided, first into the yolk-mass and the surrounding mass. The yolk-mass subdivides into two, four, eight parts, and so on. Each part is a nucleated cell.

What is the impregnated ovum called?

It is known as the embryo.

What is the decidua?

The decidua consists of the greatly thickened uterine mucous membrane and the fetal envelopes, resulting from the maternal changes due to impregnation. It is divided into three parts: 1. Decidua vera is that portion of the decidua which lines the interior of the uterus. 2. Decidua reflexa is that portion of the decidua vera which grows up over the ovum. 3. Decidua serotina is that portion of the decidua vera which becomes the site of the placenta.

What becomes of the decidua vera and the decidua reflexa?

As the ovum develops the decidua reflexa comes in contact with the decidua vera at the end of the second month; and at the close of the third month it has become intimately united with the decidua vera.

What is the amnion?

The amnion is the inner layer which contains the liquor amnii, in which the fetus floats.

What is the chorion?

The chorion is the layer which comes in contact with the decidua.

What is the fluid secreted by the amnion called?

It is called the amniotic fluid, or the liquor amnii.

Describe the amniotic fluid, and its functions.

It is a straw-colored liquid, in which the fetus floats during its development. It equalizes the pressure of the

uterine walls, and allows the fetus freedom of motion. At the time of labor the amniotic fluid aids in the dilatation of the os uteri, and lubricates the birth canal.

What is the placenta?

The placenta consists of a mass of greatly enlarged blood-vessels, etc., held together by connective tissue. It is intimately attached to the uterine wall—usually in the region of the fundus. The placenta is about eight inches in diameter, nearly circular, and weighs one to one and one-half pounds.

When is the placenta formed?

The placenta is formed during the second and third months of gestation.

What are the functions of the placenta?

The placenta performs the functions of the respiratory, nutritive and excretory organs for the fetus.

How does the placenta perform the function of respiration for the fetus?

The fetal lungs are unexpanded and require very little blood, but the liver and heart make up for the inactivity of the respiratory organs. The placenta performs the fetal respiration by oxygenation of the fetal blood, through the interchange of gases between the maternal and the fetal vessels, which takes place in the placenta. The fetal blood, darkened with carbon-dioxide, passes through the umbilical arteries to the placenta, where it becomes oxygenated by interchange of gases with the maternal blood, after which it returns purified through the umbilical vein to the fetus.

How does the fetus obtain nutrition?

By an absorption of nutritive substances through the placental vessels from those of the mother, in a manner similar to the exchange of gases.

How does excretion of the fetus take place?

By absorption of the waste products of the fetus, through the maternal vessels, in contact with the placenta.

Describe osmosis.

Osmosis is an interchange of fluids. As there is no direct mixing of maternal and fetal blood, this interchange of gaseous fluids in the placenta takes place through the permeable walls of the blood-vessels.

How is the fetus attached to the placenta?

The fetus and placenta are connected by the umbilical cord, or funis. The cord passes from the umbilicus, or navel, to the center of the placenta.

Describe the umbilical cord.

The umbilical cord, connecting the fetus with the placenta, is about twenty inches in length, and contains two arteries and one vein. During the early stages of development of the fetus the blood-vessels are straight, but later they become much twisted upon each other. They are covered with a substance known as Wharton's jelly.

Describe the development of the human embryo, from the end of the first month to the close of the second month.

At the end of the first month the ovum is about the size of a pigeon's egg, and the embryo is about one-third

of an inch long. At the close of the second month the ovum is about the size of a hen's egg.

When does the head and extremities of the fetus form?

The formation of the head and the extremities occurs at the end of the third month. The ovum is now four inches in length; the placenta is developed, the cord longer, and slightly twisted.

Describe the development of the fetus at the end of the fourth month.

At the close of the fourth month the fetus has attained six inches in length and weighs about three ounces. Sex at this time is distinguishable.

Describe the appearance of the fetus at the end of the fifth month.

At the end of the fifth month the fetus is nine inches long, and weighs eleven ounces. There is hair on the head, and lanugo, or downy hair, covers the body.

Describe the fetus at the end of the sixth month.

At the close of the sixth month the fetus is twelve inches long and weighs about twenty-four ounces. There is a faint evidence of eyebrows and lashes. A little meconium at this time exists in the large intestine.

Describe the development of the fetus during the seventh month.

The fetus is fifteen inches long and weighs about three pounds. The face is wrinkled, the eyelids can open, but the nails do not reach to the tips of the fingers and toes. A child born at this period has a reasonable prospect of living.

Describe the development of the fetus at the end of the eighth month.

At the close of the eighth month the fetus is seventeen inches long and weighs about four and one-half pounds. The face is less wrinkled, owing to a greater deposit of subcutaneous fat. A child born at this period may live.

Describe the development of the fetus at the end of the ninth month.

At the end of the ninth month the fetus is twenty-one inches long and weighs seven and one-half pounds. It is covered with a greasy, cheesy substance, called vernix caseosa, and the nails now project beyond the tips of the fingers and toes.

Describe the head of the fetus.

The head of the fetus is the largest part of an infant's body. It is oval in shape, and is divided into two parts—the cranium and the face.

What is the structure of the cranium, or skull?

The cranium, or skull, consists of eight bones, loosely joined together by membrane or cartilage. The cranium is the most important obstetrical part of the fetus. If the head passes safely through the pelvic canal, there is little difficulty in delivering the rest of the body.

What is understood by the term moulding?

Moulding consists of the process of overlapping of the frontal, the occipital, and the two parietal bones of the fetal skull during labor. Moulding diminishes the size of the head during its passage through the pelvis.

Name the sutures and the fontanelles.

The coronal, lambdoidal and sagittal sutures, and the anterior and posterior fontanelles.

Define the location of the coronal suture.

The coronal suture separates the frontal from the parietal bones of the cranium.

Define the location of the lambdoidal suture.

The lambdoidal suture separates the occipital and the parietal bones.

Define the position of the sagittal suture.

The sagittal, or greater suture, begins at the base of the nose, divides the frontal bone into two parts, and crosses the coronal suture. It separates the parietal bones from each other, and ends at the lambdoidal suture.

Describe the anterior fontanelle.

The anterior fontanelle—the largest of the two fontanelles—is diamond-shaped, and is formed by the intersection of the frontal and the coronal sutures.

Describe the posterior fontanelle.

The posterior fontanelle is small and angular in shape, and it is formed by the junction of the sagittal and the lambdoidal sutures.

Describe the general fetal circulation.

1. The fetal arterial, or red, blood mingles between the two auricles of the heart by passing through the orifice known as the *foramen ovale*. 2. The fetal blood also mingles between the pulmonary artery from the lungs and the descending portion of the aorta arch,

passing through the duct known as *ductus arteriosus*.
3. The venous or blue blood, after absorbing the impurities and excretions of the fetus, passes down to the umbilicus and lower extremities. The greater portion of the venous or blue blood now passes through the two arteries* of the umbilical cord to the placenta, where the impurities are removed by the maternal blood. In exchange the placental vessels receive oxygenated blood, which is returned by the umbilical vein and enters the fetus at the umbilicus. The larger portion of the oxygenated blood passes to the liver, where, in conjunction with the blood from the portal vein, it ramifies through the blood-vessels of the liver, after which it enters the inferior vena cava, by way of the hepatic veins. The smaller portion of the purified blood, however, when it leaves the umbilical vein, enters the duct known as *ductus venosus*, and mingles with the returning blood from the lower extremities of the fetus, and then ascends to the right auricle of the heart. Here the blood is directed by the Eustachian valve, and flows through the *foramen ovale* to the left auricle of the heart, where it mingles with the small amount of the returning blood from the fetal lungs through the pulmonary veins. The blood in the left auricle now descends to the left ventricle, after which it proceeds to circulate throughout the upper extremities, and returns to the right auricle of the heart by way of the superior vena cava, and passes over the Eustachian valve down to the right ventricle of the heart.

The fetal blood, after its general systemic circulation, is now ready to descend to the umbilical arteries, and

* The umbilical arteries carry the blue or venous fetal blood to the placenta; and the umbilical vein returns the red or arterial fetal blood from the placenta to the fetus.

thence to the placenta to be oxygenated and purified by the maternal blood.

What changes take place in the fetal circulation following birth?

Shortly after birth the current of venous or blue blood through the umbilical arteries to the placenta, as well as the return of the arterial or red blood through the umbilical vein to the new-born ceases. The Eustachian valve of the *foramen ovale*, or orifice between the right and left auricles of the heart, now closes, so that there is no longer any mingling of the venous with the arterial blood, as noted in the fetal circulation before birth.

The lungs of the new-born now expand with an inspiration of air, or oxygen, through the nostrils or the mouth. The pulmonary arteries now receive the blood which during the general fetal circulation passed through the *ductus arteriosus*, and it is conveyed to the expanding lungs.

The respiration of the new-born, therefore, consists of a process of supplying oxygen, and removing poisonous carbonic acid from the body, by diffusion and osmosis. The permeable organs of respiration after birth include the larynx, trachea and lungs.

The umbilical cord, or navel string, usually dries up and falls off in the course of five to fourteen days after birth. The umbilical arteries in the interior abdomen remain permanent in part of their course, and constitute the superior vesical arteries. The *ductus venosus* and the *ductus arteriosus* shrivel up into fibrous cords, and the umbilicus itself closes and takes on the appearance of a "button," which is located in the center of the abdomen, on the median line.

CHAPTER III

PHYSIOLOGY OF PREGNANCY, ITS SYMPTOMS AND DISORDERS

What is understood by the physiology of pregnancy?

A consideration of the changes which affect the maternal organism, both local and general, during the nine months of gestation.

What changes occur in the uterus?

The uterus is greatly increased in size. At the end of the third month the fundus is at the level of the pelvic brim; at the end of the sixth month it is at the level of the umbilicus; at the close of the eighth month it is near the ensiform cartilage; and at the close of the ninth month it usually sinks down in the abdomen. As the uterus increases in size its walls become soft and elastic.

What changes occur in the external genitals and the vagina?

About the fourth month after gestation the external genitals become more moist; the labia majora and the labia minora become larger, more open, and resisting. The meatus becomes red and prominent; the vaginal mucous membrane changes from its normal color to that of a dark purple hue, which is due to venous congestion. The vaginal secretions increase in amount toward the end of gestation, and serve as a lubricant at the time of delivery.

Describe the changes which take place in the mammary glands, or the breasts.

The mammary glands, or the breasts, begin to enlarge at the beginning of the second month, indicated by shooting pains and more sensitiveness. During the latter months the large, blue veins are distinctively visible, and if the breasts enlarge considerably the striæ appear about the fifth month. About the third month the nipples become prominent, the areola grows darker,, and these changes in color of the tissues which surround the nipples are more pronounced in brunettes than in blond types of women. The glands of Montgomery which surround the nipples are twelve to twenty in number, and they enlarge, so as to appear as little, rounded elevations. After the third month the breasts contain a thin, white fluid, known as colostrum.

What changes take place in the skin?

Pigmentation and striæ.

Describe pigmentation.

The skin is affected by an increased activity of the sebaceous sweat-glands and the hair-follicles. Many women whose hair was thin and brittle before gestation have a long and luxuriant growth at the end of the puerperium. Pigmentation occurs in certain parts of the body, especially on the breasts, where the areola becomes much darker in color; along the median line of the abdomen, extending from the umbilicus down to the mons veneris of the vulva. Sometimes the skin of the face reveals deposits of pigments, which are indicated by irregular spots, or blotches, resembling large freckles, or chloasma.

Describe striæ of the skin.

Usually the skin of the abdomen is very much stretched during gestation, and certain markings are found which are due to cracks in the skin, known as *striæ gravidarum*, or *lineæ albicantes*. These scars are usually found on the abdomen, and in some cases on the thighs, and on the mammary glands, or breasts. The color of the striæ are at first gray or pinkish, and sometimes of a bluish-purple hue. They grow lighter in color after labor, and finally take on the silvery whiteness of cicatricial tissue. In subsequent pregnancies new striæ may be formed, which mingle with the old scars.

What changes occur in the umbilicus?

The umbilicus is usually depressed during the first few months of pregnancy. At the seventh month it is on a level with the surrounding skin of the abdomen, and from that time until the end of gestation the umbilicus is more or less protruded.

What changes take place in the blood and the systemic circulation?

The blood increases in amount. The watery portion and white corpuscles increase, and the albumin and red corpuscles decrease. The left ventricle of the heart hypertrophies, and palpitation is not uncommon during gestation, due to the sympathetic nervous disturbances and pressure from the enlarged uterus.

What changes occur in the pelvis?

The changes in the pelvis consist of a thickening and softening of the cartilaginous lining of the joints, combined with a tipping backward of the spinal column, which results in throwing back the head and shoulders. These changes, due to center of gravity, causes the pe-

cular and characteristic "wabbly gait" of the pregnant woman.

What changes take place in the alimentary system?

A general disturbance of the digestive organs, owing to the increased demand for nourishment both for the pregnant woman and her child. As a result there is nausea and vomiting, caused by defective assimilation and general toxæmia.

What changes take place in the urine?

The urine increases in quantity, which is due to arterial pressure, and it is usually of a pale straw color, having a low specific gravity, and at times reveals traces of albumin and sugar. While these symptoms may not be of special significance, the urine should be carefully and frequently tested.

What is the average duration of pregnancy?

The average duration of pregnancy consists of two hundred and eighty days, or, in other words, nine calendar or ten lunar months.

What are the usual methods for predicting the correct date of labor?

Count nine calendar months from the first day of the last menstruation, and add seven days. Or count back three months from the first day of the last menstruation, and add seven days.

THE SIGNS AND SYMPTOMS OF PREGNANCY

How are the signs and symptoms of pregnancy divided?

They are divided into three groups: presumptive, probable and positive signs and symptoms.

Name the presumptive signs.

Menstrual suppression.
 Vomiting, or morning sickness.
 Irritability of the bladder.
 Mental and emotional phenomena.
 Morbid longings and dyspepsia.

Name the probable signs.

Changes in the breasts and nipples.
 Hagar's sign.
 Changes in the size and the shape of the abdomen.
 Softening and enlargement of the os and the cervix uteri.
 Violet color of the vaginal mucous membrane.
 Uterine murmur.
 Intermittent uterine contractions.

Name the positive signs.

Ballottement, or passive fetal movement.
 Quickening, or active fetal movement.
 Fetal heart sounds.

*Presumptive Signs***Describe the first presumptive signs of pregnancy.**

Cessation of menstruation is the first symptom noticed by the pregnant woman, and leads her to consult her physician. Nausea and vomiting is common, and it is more liable to occur during the morning hours, and is therefore known as "morning sickness." Irritability of the bladder is very common, especially during the latter months of gestation. It is caused by pressure of the enlarged uterus upon the bladder.

Describe the mental and emotional phenomena.

A woman with an amiable disposition may, during pregnancy, become fretful and disagreeable; or, rarely, the phenomena may be reversed, and the woman with a disagreeable disposition may become a veritable saint. Infrequently changes occur, which develop a depraved or an elevated moral, intellectual sense in the pregnant woman.

Describe the morbid longings and dyspepsia.

Pregnant women frequently have an unusual desire for sour fruits and drinks. They may also long for unpalatable food, or lose their appetite. Heartburn, pyrosis, flatulence and eructations are of common occurrence, caused from indigestion.

*Probable Signs***Describe the first probable signs of pregnancy.**

The mammary glands, or breasts, become enlarged and more movable, accompanied with a sense of fullness and tingling pain, and the large, blue veins may be distinctly visible beneath the skin. The areola darkens around the nipple, and the presence of the fluid known as *colostrum*, which may be squeezed out of the nipples, is considered a very valuable sign in a woman who has never been pregnant.

Describe the changes in size and shape of the abdomen during gestation.

The size of the abdomen corresponds with the increased size of the uterus. At the end of the third month the uterus is at the level of the symphysis pubis; at the end of the sixth month it is at the level of the

umbilicus; and at the close of the eighth and ninth months it is near the ensiform cartilage. The shape of the abdomen corresponds with the pregnant uterus, which is usually symmetrical—longer vertically than transversely.

Describe Hagers' sign.

Hagers' sign consists of a softening of the body of the uterus, just above the cervix, which changes the pear-shaped form of the uterus to that similar to an old-fashioned fat-bellied jug. An examination for Hagers' sign may be made by the abdomino-rectal touch.

Describe the softening and enlargement of the os, and of the cervix uteri.

The chief characteristic of the virgin's cervix uteri lies in its firm consistency. The cervix begins to soften and enlarge in circumference during the first month of pregnancy. The lips of the os externum becomes wider and puffy to the touch, and the fissure of the os becomes rounder and larger.

Describe the violet color of the vaginal mucous membrane.

The discoloration of the vaginal mucous membrane is due to venous congestion. The vaginal walls become thickened and form folds, which sometimes protrude slightly from the vaginal orifice.

Define the uterine murmur.

The uterine murmur, or souffle, consists of a soft, blowing sound, which is synchronous with the beatings of the mother's pulse. It has been compared to the puffing sound of an engine heard from a distance. The uterine murmur is produced in the large arteries, which

come from the broad ligaments and enter the uterine walls. With the aid of the stethoscope the sound is most frequently recognized near the lower part of the abdomen. It is more distinct on the left than on the right side of the abdomen. The murmur is heard about the end of the third month, and continues until the time for labor, and does not cease for several days after delivery. It is of very little value as a sign of pregnancy, because a similar sound may be heard in cases of uterine fibroids, ovarian tumors, and other similar conditions.

Describe intermittent uterine contraction.

Intermittent uterine contraction consists of a painless contraction of the uterine walls, which occurs at regular intervals during the whole term of pregnancy. At the end of the third month the contractions may at times be felt by placing the hand on the patient's abdomen with sufficient pressure to bring it in contact with the uterus.

Positive Signs

Describe ballottement.

Ballottement is a sudden locomotion of the fetus in the uterus. It is produced, and felt by the physician, by insertion of one or two fingers into the vagina, and the uterus is pushed up so as to cause the fetus to rise and fall back again like a heavy body in water. It is usually felt about the sixteenth to the thirty-second week of pregnancy.

Describe active fetal movements.

Active fetal movements are muscular motions of the body and limbs of the fetus, felt by the mother about

the eighteenth week after gestation. The contractions of the abdominal muscles, gas in the intestines, may be mistaken for fetal movements. After the fifth month the fetal movements are recognized by abdominal palpation.

Describe the fetal heart sound.

The fetal heart sound is similar to that made by the ticking of a watch heard from beneath a pillow. Its frequency varies from 120 to 160 beats per minute. Fetal heart beats are generally heard about the fifth month with the aid of the stethoscope; the adjustment of the stethoscope on the mother's abdomen depends upon the presentation and position of the fetus.

CHAPTER IV

COMPLICATIONS OF PREGNANCY

What are the causes of nausea and vomiting?

Nausea and vomiting may be caused by the stretching of the uterine muscular fibers, due to the growing ovum, diseases of the cervix, and displacement of the uterus.

What is the treatment?

The remedies are numerous, consisting in regulation of the diet and of the bowels. The diet should consist of liquids, in small quantities, such as milk, koumiss, buttermilk, various gruels, and meat soups. The bowels should be watched, and cathartic pills and laxative enemata may be given. These often give good results, since they remove the accumulated toxin poisons in the intestinal tract, which may have been the real cause of the emesis.

What are the causes of constipation?

Constipation is a sympathetic affection during the early months of gestation. It may be due to indigestion and pressure of the enlarging uterus against the bowels, especially during the latter part of pregnancy.

What is the treatment?

The treatment consists of mild saline laxatives before breakfast, during the early months of pregnancy. The diet should consist of liquids, including oatmeal and other cereals, milk, buttermilk, koumiss, hot and cold water; fruits, such as apples, figs, dates, prunes, oranges; meats,

including lamb or chicken, should be eaten once a day. During the latter months of gestation the patient may be given laxatives, such as cascara sagrada, calomel, magnesia sulphate, olive oil, or an enema may be ordered daily.

What is the treatment for diarrhea?

Usually, when diarrhea has been preceded by constipation, and consists chiefly of mucus, the general remedy consists of a laxative of castor oil and laudanum, or of citrate of magnesia, to cleanse the bowels. The occurrence of diarrhea should always be reported to the physician. If neglected, it might lead to abortion or premature birth, especially if it is accompanied with tenesmus.

What is the usual cause of an irritability of the bladder?

During the first three months of pregnancy, irritability of the bladder is caused by the prolapsed uterus, and later from pressure of the enlarged uterus against the bladder, which is sometimes due to the abnormal position or presentation of the fetus.

Define cystitis, and the common causes.

Cystitis consists of an inflammation of the mucous membrane which lines the bladder. The most frequent causes are retention of the urine, due to retroversion of the uterus, improper catheterization, and possibly gonorrhea.

What are the complicating diseases of the kidneys?

Albuminuria, nephritis, uremia, toxemia, and eclampsia.

Describe the complications of the kidneys.

Albumin is found in the urine in a certain proportion of cases during pregnancy, and albuminuria is one of

the early and frequent symptoms of disease of the kidneys. It is due to deficient activity of the kidneys in elimination of the toxic poisons from the system, and frequently results in acute nephritis, uremia, and other kinds of toxemia which, in severe cases, produces convulsions. Convulsions are sometimes followed by coma and death.

What are the symptoms of toxemia?

Headache, salivation, general malaise, constipation, deficient excretion of urine, and secretion of the skin, and a coated tongue.

Define eclampsia.

Eclampsia is an acute disease which may occur during pregnancy, labor, or the puerperal state. It is characterized by the occurrence of convulsions, which at first attack the voluntary muscles, and finally extend to the involuntary muscles, ending in partial or complete coma, which may result in death, or in the return of consciousness after a few days, and recovery.

Classify the symptoms of eclampsia.

They are divided into two groups: the premonitory symptoms and the symptoms of the attack.

What are the premonitory symptoms?

Headache, vertigo, dullness and lassitude, dark spots or flashes of light before the eyes, epigastric pain, nausea, vomiting, insomnia, edema of the face and extremities, melancholia, albumin and casts in the urine.

How are the symptoms of the attack divided?

They are divided into three periods: 1, invasion; 2, tonic convulsion; 3, clonic convulsion.

What is the treatment?

The chief treatment for eclampsia consists in eliminating the waste matter from the body, by keeping the skin and the kidneys active and the bowels open.

What are the first duties of the nurse in case of a convulsion during the absence of the physician?

In case the patient has a convulsion, or it is imminent, the nurse should send for the physician at once. The patient should be placed in bed, and all tight clothing, jewelry and false teeth, if any, should be removed. Great care must be taken so as to prevent the patient biting her tongue during the convulsion. Take a small towel and place it between the teeth and hold the lower jaw downward, or a clothespin may be used, and should be inserted between the teeth. The clothespin should be covered with gauze, sewed on firmly, and a string should be tied about the end, so that it may be hung near the head of the bed, conveniently at hand in case of a convulsion.

Describe the general care of the patient during eclampsia.

The patient should be kept absolutely quiet. The nurse should prepare for an immediate operation. Involuntary movements of the bowels may occur; in changing the linen and cleansing the patient, great care must be taken so as to prevent infection of the vulva, and not disturb the patient any more than possible. In order to promote diaphoresis the physician may order hot pack. When giving hot pack, an ice-bag should be applied to the head. Hot bricks are sometimes ordered in giving the pack. The bricks should be thoroughly heated, and saturated with alcohol, after which they should be well wrapped in towels, so that they do not come in contact with the patient's body.

In case narcotics, such as morphine, chloral, etc., are ordered the nurse should carefully watch the effects of the drugs, as they act with unusual strength in such cases. Oxygen may be administered or a normal salt solution may be given by hypodermoclysis by the physician. The patient's diet should consist of milk and water. The nourishment is usually given through a stomach-tube until she can swallow. Great care must be taken so as to prevent water, medication mucus, etc., being drawn into the lungs. This might prove a serious condition, and cause broncho-pneumonia—which often results in death.

The new-born infant, as a rule, is not allowed to nurse until several days after the mother has recovered consciousness. Mental aberration is not an uncommon sequel of eclampsia.

What should the nurse do in case edema of the lungs develops?

She should turn the patient on her side, so that her head hangs over the edge of the bed. This permits the frothy mucus to escape from the mouth. The nurse should support the patient's head with one hand, and raise the shoulders with the other hand—so as to allow the free expansion of the chest.

Why should the ice-bag be applied to the head during a hot-pack?

Cold is applied to the head in order to prevent dilatation and congestion of the cerebral blood-vessels, etc.

What serious effects should be guarded against in giving a hot-pack.

The nurse should watch for depression of the heart,

fainting, burns, chilling of patient—especially when removing the pack.

How long does it require for a patient to recover from eclampsia?

The coma may disappear in one to four days, but the complete recovery of a patient is not rapid, and requires some time.

What is the mortality from eclampsia?

The average mortality is about 33 per cent.

Describe anemia.

Anemia is due to the diminishing of the red corpuscles, and an increase of fibrin in the blood. In a mild degree, anemia is the normal condition of the blood of a patient during pregnancy.

What are the symptoms of severe anemia?

The symptoms of anemia usually begin with headache, pallor of skin, puffiness of face, edema of the lower extremities, loss of appetite, weakness, sleeplessness, dizziness, dyspnoea, and frequent attacks of syncope.

What is the treatment?

The treatment consists of fresh air, exercise out of doors; special diet—such as raw beef, beef juice, and any kind of other meat soups; eggs, green vegetables, and fruit juices.

Describe edema.

Edema is a dropsical condition. The edema, or swelling, usually occurs in the lower extremities, which are generally relieved by rest in bed—with the limbs slightly elevated. It is not an important symptom during pregnancy, unless associated with albuminuria. If the edema

or dropsical swelling, however, extends to the hands or face, it should be regarded seriously as a possible forerunner of eclampsia. In any case of edema the urine should be examined.

What is salivation?

Salivation consists of an increase of a constant dribbling of the saliva, day and night. It is not accompanied with an offensive breath, but proves very annoying to the patient. It is one of the rarer complications of pregnancy, and it occurs usually during the early months, but it may continue until the end of gestation.

What is the treatment for salivation?

The treatment should be directed by the physician, who will order astringent mouth-washes, accompanied with medications, such as atropine, bromides, or chloral to be taken internally. Iron, and an alterative tonic, together with a generous, nourishing diet, are very important.

Define insomnia.

Insomnia is an inability to sleep, and is one of the common symptoms which may develop during pregnancy. Little can be done to improve this condition without the administering of narcotics.

What is the treatment for insomnia?

Hygienic methods, consisting of plenty of fresh air, exercise, general massage, alcohol rub after the patient has retired at bedtime. The sleeping-room should be large and well ventilated. If these treatments do not secure natural sleep, the case should be reported to the physician, who will probably order a mild narcotic, such as the bromides, trional and sulfonal, etc.

What are the causes of palpitation of the heart?

Palpitation of the heart during the early months of pregnancy is usually due to anemia and nervous debility, and later it is induced by the enlarged uterus, which pushes up the diaphragm and embarrasses the heart action.

Describe syncope, or fainting.

The attacks may occur several times a day; the pulse is feeble, the pupils are dilated, and the patient becomes partly unconscious.

What is the treatment?

The patient should be placed in a recumbent position, with the head low, and given plenty of fresh air. Apply aromatic spirits of ammonia to the nostrils, bathe the face with cold water, and remove all tight-fitting clothes.

What are the causes of neuralgia and headache?

Neuralgia, if facial, may be due to an affection of the patient's teeth, which require the attention of a dentist. Headache, while it may possibly be of a purely nervous origin, may also prove to be a symptom of a severe constitutional disease. Therefore, the nurse should refer the patient to the attending physician.

Describe paralysis.

Paralysis consists of a loss of voluntary motion of the muscles. There are several forms which may complicate pregnancy, including hemiplegia, paraplegia, facial paralysis, and paralysis of the nerves of the special senses.

What are the causes?

Paralysis may be caused from uremia, cerebral congestion, or even due to a purely neurotic condition of the pregnant woman. It may appear either before or after delivery. The treatment should be left entirely to the physician.

Describe varicose veins.

Superficial varicosities appear as a tangled mass of purple veins, often as large as a lead-pencil. These dilatations of the veins usually begin under the bend of the knee and extend up and down the limb, along the course of the blood-vessels. In severe cases, these varicosities affect the veins of the external genitals and the uterus. The first symptoms consist of a dull pain in the extremities due to the distention of the veins from the legs.

What is the cause?

Varicose veins are chiefly caused by pressure of the enlarged uterus on the great abdominal veins, which interferes with the return of the blood from the lower extremities to the heart. It is a common complication during pregnancy.

What is the treatment?

The bowels should be carefully regulated, and the patient should assume a recumbent position as much as possible. An elastic stocking should be worn, or a bandage may be applied.

What is a thrombus?

It consists of a blood-clot in a vessel at the point of obstruction.

How is it treated?

Thrombosis is treated by applications of cold dressings over the affected part, and in all cases absolute rest for the patient, so as to avoid the occurrence of embolism.

What is an embolus?

It consists of an escaped blood-clot, or other parts brought from a distant blood-vessel by the circulatory blood-current, and which usually obstructs the circulation wherever it lodges.

Define hemorrhoids, or piles.

Hemorrhoids, or piles, consist of varicosities of the veins about the lower end of the rectum and the anus. They are due to pressure, which interferes with the return venous circulation. They are aggravated by constipation, which often causes great distress to the patient. The most prominent symptom is a constant, painful desire to move the bowels, which is known as rectal tenesmus.

What is the treatment?

The treatment consists of laxatives to regulate the bowels, cold water enemata, and an application of ointment which contains gallic acid. The ointment is procurable at any reliable pharmacy, under the designation of nut-gall ointment. If these treatments are not successful, the case should be reported to the physician.

Describe chorea.

Chorea, known as St. Anthony's, St. John's, and St. Vitus's dance, consists of involuntary muscular twitchings of the body. It is one of the rarest complications of pregnancy, and occurs chiefly among those who have previously suffered from the disease. Chorea may be-

gin suddenly, and usually appears during the early months of first pregnancies.

What are the symptoms?

The symptoms of chorea consist of involuntary movements, or twitchings of the arms and legs, which gradually extend to other groups of muscles of the body. Chorea is a serious complication, which sometimes ends in insanity and premature labor. The infant sometimes is affected with the disease. All the characteristic symptoms of chorea should be reported to the physician without delay.

Describe general pruritus.

General pruritus consists of an itching of the skin, without any visible eruption. It is almost always neurotic in character, although it may be due to a gouty condition and to diabetes.

What is pruritus of the vulva?

It consists of an intense itching of the external genitals, and occurs frequently during pregnancy. It causes the patient much suffering, and sometimes agony.

What are the causes?

Irritating vaginal discharges, lack of cleanliness, diabetes, the presence of parasites, and ascarides from the rectum.

Describe leucorrhœa, or whites.

Leucorrhœa consists of a whitish discharge from the vagina, and occurs frequently during pregnancy, especially if the patient is anemic. Generally the disease is simply a hyper-secretion, due to congestion of the vaginal wall, or cervix uteri.

What is the treatment?

Leucorrhœa is often relieved by tepid vaginal douches consisting of a solution of borax—one ounce of borax to two quarts of sterile water—given morning and evening, as ordered. If the douches are given too hot, and with too much force, they are liable to irritate the uterine muscles so as to contract the uterus and cause a miscarriage during pregnancy.

What are the symptoms of displacement of the uterus?

The symptoms of displacement of the uterus consist of pains in the lumbar and sacral regions; a sense of weight and bearing down in the pelvis; constipation and tenesmus, and an irritability of the bladder. Any such combination of symptoms should be reported to the attending physician at once. The general symptoms of all types of displacement of the uterus are practically the same, as far as the nurse's observations are concerned.

What are the different positions of displacement of the uterus?

Anteversion, ante flexion, retroversion, and retro flexion.

What is anteversion?

Anteversion consists of the os and the cervix uteri being tilted backward, while the fundus is thrown forward.

What is ante flexion?

Ante flexion consists of the bending of the uterus, so that the fundus and body are curved forward toward the bladder and the pubes.

What is retroversion?

Retroversion consists of the fundus of the uterus falling over backward, and the cervix tilting upward and forward toward the pubes.

What is retroflexion?

Retroflexion consists of the bending of the axis of the uterus, in which the os externum and the vaginal portion of the cervix appear to maintain their normal position, while the fundus is bent backward toward the sacrum.

What is the abnormal development of the ovum outside of the uterine cavity called?

Ectopic gestation, and extra-uterine pregnancy.

Name the different varieties of ectopic gestation.

Tubal pregnancy, interstitial pregnancy, ovarian pregnancy, abdominal pregnancy, and there are several sub-varieties.

What is tubal pregnancy?

Tubal pregnancy occurs when the impregnated ovum remains and develops in the Fallopian tube.

Describe interstitial pregnancy.

Interstitial pregnancy takes place when the ovum is developed in that portion of the oviduct which passes through the uterine wall.

Describe ovarian pregnancy.

Ovarian pregnancy takes place when the impregnated ovum remains in the ovary, after the Graafian vesicle has ruptured it.

Describe abdominal pregnancy.

Abdominal pregnancy takes place when the impregnated ovum is developed in the cavity of the abdominal peritoneum.

What are the causes of ectopic gestation?

The causes are due to an inflammation of the mucous membrane, associated with a loss of the ciliæ; to pelvic tumors which press upon the Fallopian tube, and to occlusion, due to inflammation, and an atrophic condition of the tube, either congenital or due to hyper-involution, after former labor, and various other diseases.

What are the symptoms of ectopic gestation?

The early symptoms of ectopic pregnancy are similar to those of normal pregnancy. The uterus is somewhat enlarged, the irritability of the breasts, bladder, and constipation, and tenesmus of the bowels are present. The menses are absent, although there usually appears a slight flow at each monthly period, due to congestion of the membrane lining the uterus. As ectopic gestation advances, there occurs considerable acute, sharp pains on the side of the affected tube, which extend down the patient's leg. These pains are the result of the stretching of the tissues of the tube or the uterine wall. Any such combination of pain, accompanied by slight bleeding, should be reported to the attending physician at once. Cases of tubal and interstitial pregnancies, unless recognized and an operation performed, will result in rupturing the tissues, and the fetus will enter the abdominal cavity sooner or later. This rupture usually occurs between the first and third months of pregnancy. The patient may die from an internal hemorrhage or from shock and subsequent peritonitis.

What are the symptoms of a rupture of the ectopic sac?

The symptoms consist of excruciating abdominal pains, followed by a rapid onset of the signs of severe internal hemorrhage. The nurse should send for the physician at once, and meanwhile keep the patient as quiet as possible. She should also prepare for a speedy operation for abdominal section, which must be performed, as a rule, to save the patient's life.

What is placenta previa?

Presentation of the placenta before the fetus, due to the placenta being located in the lower segments of the uterus, directly over or close to the internal os.

Why is this location of the placenta considered serious?

It is serious, since hemorrhage is liable to occur at any time during the period of gestation.

Name the different varieties of placenta previa.

Central placenta previa, marginal placenta previa, and lateral placenta previa.

Where is the placenta located in central placenta previa?

It is located in the middle, or directly over the os.

Where is the placenta located in marginal placenta previa?

It is located so as to cover the internal os completely.

Where is the placenta located in lateral placenta previa?

It is located so as to reach down to, but does not cover the internal os.

What are the characteristic symptoms of placenta previa?

The characteristic symptoms consist of a sudden dis-

charge of bright red blood from the vagina, without any known cause. The first hemorrhage is usually slight, although the amount of blood increases with each successive attack. The patient may die during a hemorrhage of placenta previa, even before the arrival of surgical aid.

What should the nurse do at once in case of hemorrhage?

After notifying the physician, the nurse should place the patient in bed, keep her as quiet as possible, and avoid arousing her suspicion of the true state of the hemorrhage. The nurse should then make speedy preparation for an immediate operative delivery of the fetus.

Is epistaxis, or nosebleed, a frequent complication during pregnancy?

Epistaxis, commonly known as nosebleed, occurs occasionally during the latter months of pregnancy, or during the early stages of labor. It is usually due to excitement and anemia of the patient. Should the hemorrhage from the nose prove intractable, the patient may lose a great quantity of blood, which will greatly weaken her. Nosebleed should be reported to the physician at once.

What should the nurse do in case of epistaxis, or hemorrhage from the nose?

The patient should be kept quiet, with the feet elevated, and the nurse should compress the nostrils between her forefinger and thumb; apply cold applications to the back of the neck and over the bridge of the nose. If these treatments are not successful she should pack the nostrils with cotton, or gauze, saturated with vinegar, lemon-juice, strong tea, or a solution of alum, 1 to 2,000. The patient should not be allowed to blow her nose, as it

would disturb the important formation of clots, nature's own remedy for allaying hemorrhage.

Is scarlet fever a frequent complication of pregnancy?

Scarlet fever is a rare complication during pregnancy, and it is considered very serious, both to the mother and the infant. It is more liable to occur during the puerperium than the period of gestation.

Is pneumonia a frequent complication of pregnancy?

Pneumonia during pregnancy is of rare occurrence, and it usually proves fatal both to mother and child. If abortion, or premature labor occurs, the patient appears somewhat relieved temporarily. The death of the patient is usually ascribed to heart-failure, sometimes associated with hydremia and pulmonary edema.

Describe tuberculosis during pregnancy.

Tuberculosis shows apparent improvement during pregnancy, but the fatal progress of the disease is probably hastened, since the patient's decline is usually very rapid after the birth of her infant.

Is malaria a serious complication of pregnancy?

Yes, malaria is considered a serious complication during pregnancy. It is liable to cause abortion, or premature birth, due to the high temperature of the disease, or to the large doses of quinine usually required to counteract the fever of malaria.

Describe the complication of syphilis.

Syphilis is a specific disease, and proves a serious complication, both to the mother and her infant. It is contracted by inoculation through the mucous membrane, usually during sexual intercourse; the infection of a

scratch, or an abrasion on the hand or skin of the body; through kissing, drinking from glasses, using spoons, towels, lavatories, and wearing apparel of those afflicted with the scourge. The disease may also be congenital—that is, received at birth from a syphilitic mother or father. During pregnancy the disease is liable to cause abortion, or premature labor. A pregnant patient suffering from a syphilitic complication should be placed under active treatment during the entire period of gestation.

What are the general characteristics of congenital syphilis in the new-born?

The characteristic symptoms of the disease in the new-born infant consist of blebs on the soles of the feet and on the palms of the hands; a general eruption of the skin, known as rose-spots; snuffles, very similar to a cold in the head; cracks, and superficial ulcers around the infant's mouth and the anus; and subsequently marasmus, or an emaciation of the body through lack of assimilation of food, etc.

CHAPTER. V

HYGIENE OF PREGNANCY

Describe the proper clothing for the pregnant woman.

The clothing of the pregnant patient should be warm, but not of a heavy texture. Woolen garments should be worn next to the skin, and all garments which circularly constrict any part of the body must not be worn, such as tight skirtbands, corsets, round garters, etc. The skirts should be supported from the shoulders by means of some form of corset waist so as to equalize their weight. There should be no pressure on the uterus from above downward; instead, the uterus should be supported from below upward by some form of abdominal supporter.

Why should the pregnant woman not wear tight-fitting clothes?

All tight-fitting garments affect and restrict the respiration and the circulation by pressure on the large abdominal blood-vessels. The normal action of the digestive organs, the liver and the kidneys also are seriously hampered, as well as the full development of the fetus in the uterus. As a result from wearing tight-fitting corsets, etc., deformities such as "club-footed" infants may develop.

What are the causes of an extreme prominence of the lower abdomen?

The prominence, or so-called "high stomach" of pregnancy, may be chiefly caused from general weakness of

the abdominal muscles, or from a hernia—a rupture of the recti muscles. As a result of weakness of the abdominal wall, especially with the enlarging uterus, the intestines fill with gas, pitch forward, and often cause the liver and the kidneys to prolapse. Other aggravating causes include the wearing of tight-fitting corsets, high-heeled shoes, and overstraining at the time of labor. Inattention to the bowels during the puerperium also favors abdominal weakness.

When should the impregnated patient first consult a physician?

She should consult a physician about the third month after conception, and at the same time inform him whether she is troubled with persistent nausea, vomiting, severe headache, edema of the lower extremities, any abnormalities of the urine, or bloody vaginal discharges, etc.

Describe the proper diet for the pregnant woman.

The general diet should consist of easily digested food, including fruits, milk, eggs, oatmeal, hominy, rice, graham and brown bread, toast, biscuits, soups of all kinds, broiled and boiled fish of all kinds, raw oysters and clams. Among the vegetables should be included baked and boiled potatoes, onions, spinach, cauliflower, asparagus, green peas, string beans, mushrooms, lettuce, or other salads with olive oil. Meats, including chicken, mutton or lamb, should be eaten once a day at dinner-time. Pastry and all other rich foods should be avoided. Plenty of pure water—at least one to two quarts—should be taken daily, while very little tea and coffee, and absolutely no alcoholic liquors, should be indulged in unless specially ordered by the physician.

What precaution should be taken to regulate the bowels?

The pregnant woman should have at least one evacuation of the bowels daily. In order to regulate the bowels she should drink a glass of water every morning and evening, and should also eat some kind of fruit—such as oranges, apples, prunes, figs, and dates regularly, and thoroughly masticate them. It often proves beneficial to begin with fruits systematically, by eating one prune at first and increase one prune daily for ten days; then decrease one prune daily for ten days.

What should be done in case of persistent constipation?

It should be reported to the physician, who usually resorts to mild cathartics—such as fluid of cascara sagrada, one dram at bedtime; and saline laxatives before breakfast—such as Pluto water, citrate of magnesia, etc. Enemata are usually ordered for temporary relief only, and are not continued daily. Nearly all pregnant women are more or less constipated during the latter months of gestation.

Why should enemata not be employed daily for the relief of constipation?

Enemata given daily for some time are liable to dilate and weaken the bowels, and result in an irritation and the inactivity of the muscles of the rectum.

Should the pregnant woman take daily exercise?

Yes, daily exercise in the open air and sunshine is beneficial during the entire period of gestation. Walking is one of the most invigorating and refreshing exercises, unless it causes fatigue, in which case the exertion may prove too great. Golf, tennis, swimming, long

walks, sewing on a machine, should not be indulged in, and large crowds, overheated rooms, excitement, drafts, etc., should be avoided.

How often should the patient bathe?

She should take a warm bath daily, in order to keep the skin active and the pores open. Baths are beneficial and restful when taken at night, just before retiring, since danger of taking cold is lessened.

What attention should be given to the patient's teeth?

The teeth of the pregnant woman are liable to undergo certain destructive changes, which are supposed to be due to an increased acidity of the saliva. In rare instances persistent toothache occurs, which cannot be traced to any lesion of the teeth or gums. The pain is believed to be caused by reflex origins. The patient should have her teeth examined and treated by the dentist, as a precaution against toothache, during the early weeks of pregnancy. She should not neglect to brush the teeth and rinse the mouth thoroughly with some antiseptic solution before and after each meal, and upon rising and retiring at morning and evening. If this treatment is carefully followed, and the pain and soreness of the teeth and gums still continues, it should be reported to the physician immediately.

Describe the patient's sleeping-room.

The patient's sleeping-room should be large, light and quiet. The window should be open a few inches from the upper and the lower sash, in order to insure a free circulation of fresh air, although all drafts must be avoided.

What should be done to prevent the formation of lineæ, or striæ gravidarum?

The efforts to prevent the scars formed by the over-stretching of the skin of the abdomen are not very successful. The physician, however, usually orders an inunction of albolene, or lanoline, applied daily to the abdomen during the latter months of pregnancy.

How often should the patient send a specimen of urine to the physician during pregnancy?

A specimen of urine should be sent to the physician once a month, or oftener, during the close of the period of gestation. The specimen should consist of four ounces of urine, saved from the total amount voided during the entire twenty-four hours. The specimen-bottle should be sterilized before being filled with urine, and corked. A label should be pasted on the bottle, containing patient's name, address, total amount of urine voided during past twenty-four hours, date, etc. The specimen is usually requested to be sent to the physician's office during the early morning, so that he may have an opportunity to examine it before making his daily calls.

What attention should be given the breasts and nipples during pregnancy?

In case the patient's breasts become large and heavy, they should be supported with a breast-binder, or some form of supporter. The breasts should be bathed carefully with warm water and castile soap daily, and the nipples should be anointed with cocoa-butter, or albolene, so as to soften and remove any colostrum which the breasts secrete during the latter months of gestation. Depressed, or flat, nipples may be gently drawn out every morning and evening.

CHAPTER VI

OBSTETRICAL OUTFITS AND SUPPLIES

Nurse's Outfit and Supplies

Describe the obstetrical nurse's outfit and supplies.

The obstetrical nurse should be supplied with a sufficient number of uniforms, aprons, two operating gowns, and a washable gown, or wrapper, for night duty. The uniforms should be made of wash material, either white duck, linen or muslin, or some other quiet, restful color. The nurse should not wear her uniform when off duty, or on the street.

What surgical supplies are required?

Two clinical thermometers—one for the mouth and the other for rectal temperatures.

One bath thermometer.

One thermometer for registering temperature of patient's room.

Two hypodermic syringes, needles, etc., in perfect working order—one for ordinary stimulants and the other for brandy, camphorated oil, etc.

One enamel tray or agate-ware basin, for sterilization of hypodermic needles, instruments, etc.

One teaspoon.

One wineglass.

One one-ounce graduated minim glass.

One graduated medicine glass.

One eight-ounce graduated measuring glass.

- One safety razor.
- One pair bandaging scissors.
- One pair surgical scissors.
- One pair thumb forceps.
- One pair long forceps—for handling sterile supplies.
- One pair rubber gloves.
- One rectal tube, eighteen inches long.
- One to three rubber male catheters, different sizes.
- Two glass female catheters, different sizes.
- One two-quart douche-bag, or can.
- One two-quart hot-water bag.
- Two nail brushes.
- Six orange sticks.
- Two kidney-shaped pus basins, large and small size.
- Four ounces green soap.
- One bar castile soap.
- One bottle of bichloride of mercury tablets.
- Two ounces lysol, or pure carbolic acid.
- One tube of sterile white vaseline.
- One bottle carbolated yellow vaseline.
- Two ounces of aromatic spirits of ammonia.
- Two ounces of boracic acid powder.
- Four ounces soda bicarb.
- Four ounces of washing soda, or borax.
- Four ounces of alcohol, 95 per cent.
- One-quarter pound of absorbent cotton.
- One to five yards of sterile gauze.
- Two packages of sterile, umbilical tape, or ligatures.
- Three dozen safety-pins—small, medium, and large sizes.
- Sewing needles, thimble, and spool of white cotton.
- One box safety matches.
- One ice-pick.
- One pad of clinical and medical records, or charts.

One writing pad, or a few pages of note-paper for writing down physician's verbal orders.

Patient's Outfit and Supplies

Describe the patient's outfit and supplies.

The obstetrical patient's outfit and supplies should consist of an ample supply of warm, plain, washable night-dresses, a bath-gown, slippers, etc.

Two short obstetrical gowns.

Six long muslin night-dresses.

One pair of long, large, white stockings, or one pair of maternity stockings.

Three to six dozen sterile vulvar pads.

Six dozen sterile cotton and gauze sponges.

Two large obstetrical pads.

Two small obstetrical pads.

Four T-binders.

Four abdominal binders.

Three breast binders.

One dozen soft old towels.

Six large sheets.

Four small sheets.

Six pillow-cases.

Two pairs of clean, or new, woolen blankets.

How are the sterile vulvar-pads made?

The vulvar-pads are easily made by folding a piece of absorbent cotton, three by eight inches in size, within a piece of gauze or cheese-cloth, twelve inches square. The gauze should be folded so that the pad, when completed, will be twelve inches long by three inches wide. The ends should be sewed firmly so as to keep the cotton in place. This size is long enough to pin in front and

behind to the abdominal binder, which keeps the vulvar-pad in position. As soon as the supply of pads are made, they should be wrapped in unbleached muslin, six pads in each package, pinned securely, labeled, and sterilized.

Describe the obstetrical pad.

The large obstetrical pad should be made of absorbent cotton, two inches thick by twenty-four inches square. The cotton should be laid evenly on a piece of sterile gauze, twenty-six inches square, the edges turned in, and another piece of gauze, twenty-six inches square, placed on top of the cotton; the edges should be turned in and fastened, and the whole pad stitched, or basted, six times each way, so as to form small squares in order to hold the cotton in place. If not properly caught to the gauze it will slip out of position in a mass. Each pad, when completed, should be wrapped in unbleached muslin, pinned, labeled, and sterilized.

What are the uses of the obstetrical pad?

The obstetrical pad, known as the delivery pad, ranges from large to medium sizes, and serves the purpose of the Kelley pad. It is placed under the patient's buttocks during delivery. A second obstetrical pad may be placed under the buttocks during the first few hours after delivery, so as to prevent the lochial discharge from soiling the obstetrical bed.

Describe the abdominal binders.

The abdominal binders should be made of unbleached muslin, one and one-half yards in length by three-fourths of a yard wide. It is better not to hem the edges. They should be sterilized.

List of Surgical Supplies

One large rubber sheet, for the protection of entire mattress.

One small rubber sheet, or white enamel cloth, one yard square, for a draw-sheet.

Five yards of cheese-cloth.

Five yards of sterile gauze.

Two pounds of sterile absorbent cotton.

One medium-sized bottle of bichloride of mercury tablets.

Eight-ounce bottle of lysol.

Two ounces of boric-acid crystals.

Eight ounces of alcohol, 95 per cent.

Four ounces of tincture of green soap.

One tube of white sterile vaseline.

One bottle of carbolated yellow vaseline.

One two-quart hot-water bag.

One two-quart douche-bag, complete, in working order.

Two glass douche nozzles.

One large-size enamel douche-pan.

Two enamel, or agate-ware, basins, large and medium sizes, for bichloride and lysol solutions.

Two enamel, or agate-ware, pitchers, for solutions, etc.

One slop-jar, or a covered enamel pail, for soiled sponges, pads, etc.

Two covered enamel vessels, or large glass-corked water-bottles, in which to keep sterile supply of cold and hot water.

Six hand towels for bath-room use.

One bar castile soap.

Two nail brushes.

Six orange sticks.

One large new enamel, or agate-ware, tea-kettle, for boiling water.

One small, *new*, tin wash-boiler, for sterilizing basins, pitchers, and other supplies.

Where should the patient's outfit, and supplies be placed, and when should they be in readiness?

The outfit and supplies should be in readiness several weeks before labor, and neatly wrapped in napkins, labeled, sterilized, and packed away in a large covered box, conveniently at hand in case of emergency. Nothing proves more annoying, both to the nurse and the physician, than the confusion which arises in case the outfit and supplies have to be ordered after actual labor pains have begun. Without the necessary sterile supplies, it proves utterly impossible for the nurse and the physician to take aseptic precautions, which greatly endangers the life of both mother and her new-born infant.

The list of surgical supplies for both mother and infant are usually furnished, therefore, to the patient by the attending physician two months or more before the date of labor.

Infant's Outfit and Supplies

Describe the necessary outfit and supplies for the infant.

The outfit and supplies should consist of warm flannel undergarments, flannelette gowns, muslin slips, and dresses, etc.

Two soft flannel blankets, one yard square, to wrap the infant in after birth.

Six straight abdominal bands, eighteen inches long by five inches wide. The edges should not be hemmed, but notched or pinked.

Four knit silk and wool, or stockinet, shirts.

Four flannel petticoats. The skirt should be made with a waist of flannel or of muslin, opening in the back, so as to be put on easily together with the dress. This style, known as the ready-made "Gertrude Garments" for infants, can be purchased at any large department store.

Eight dresses, made simple, without ruffles or embroidery. Very narrow lace insertion, fine tucking, hem-stitching, and feather-stitching are simple and appropriate trimmings.

Four night-dresses of light weight, twilled flannel, made after a "slip" pattern, a size or two extra large for infant.

Four pairs of white woolen stockings.

Two pairs of knit bed-socks.

Four dozen diapers, made of linen, cotton diaper-cloth, or of canton flannel. The diapers should be made twice as long as broad, in two sizes. The largest should be twenty-six by fifty-two inches, and the smallest should be twenty by forty inches in size.

Two dozen cheese-cloth diapers, made of one yard of cheese-cloth folded twice, so that it is one-half yard square, and consisting of four thicknesses. This is a soft, absorbent diaper.

Bassinette and Surgical Supplies

One bassinette, or large clothes-basket, or a crib, for the infant. The bassinette, or crib, should be provided with a hair mattress, or a hair pillow, instead of a cotton mattress or feather pillow. The latter is heating to the body and too soft for the infant's spine.

One large rubber sheet, to protect entire mattress or pillow.

One small rubber sheet, to use under draw-sheet or quilted pads.

Four small sheets, long enough to tuck under pillow or mattress.

Two light-weight flannel blankets, bound with washable ribbon.

Two large soft bath towels, to wrap about the infant immediately after birth.

One medium-sized white enamel, or rubber, bath-tub.

One pair of scales, for weighing infant. The ordinary grocer's scales, balanced with iron weights for pounds and a bar for ounces, is most convenient.

Two enamel, or agate-ware, basins, large and medium sizes, for sponging infant until its first tub-bath.

One two-quart enamel, or agate-ware, pitcher.

One two-quart fountain syringe, or a medium-sized bulb syringe.

One two-quart hot-water bag.

One bath thermometer.

Six soft wash-cloths.

Two soft sponges, one small for face and the other large.

Six ounces of pure olive oil, for anointing infant immediately after birth, before bath.

One wicker, shallow basket, lined with muslin, for toilet articles.

One cake of castile soap.

One tube of plain, white, sterile vaseline, or solid albolene.

One-half pound of sterile absorbent cotton.

Two yards of sterile gauze.

Four ounces of boracic acid powder, for umbilicus, and solutions to cleanse eyes and mouth.

One box borated talcum powder.

One jar of sterile dressings, for umbilicus.

One package of fine tooth-picks.

Two dozen cotton applicators.

Three dozen safety-pins, small, medium and large sizes, for abdominal bands, skirt bands, diapers, etc.

One soft hair brush and fine-toothed comb.

One wicker hamper, for soiled clothes.

One covered enamel, or agate-ware, large pail, for soiled diapers.

Six cakes of Ivory and Wool soap, for washing infant's diapers and flannel bands, shirts, etc.

Where can the sterile obstetrical outfit be purchased?

The obstetrical outfit, complete in every detail and containing the absolutely necessary supplies, sealed in an antiseptic cabinet or box, can be purchased at any of the large drug-stores, and at the leading registries for nurses. The prices range from \$5.00 to \$30.00 for the outfits, according to amount of supplies in each box, delivered by messenger or express, as directed.

List of Sterile Supplies Contained in the Average-sized Obstetrical Cabinet

Two delivery-pads, 36 x 36 inches, one heavyweight, one mediumweight.

Two dozen vulvar-pads.

One pair obstetrical drawers.

Two abdominal binders, 18 x 45 inches.

Six towels.

Two mull breast-binders.

Two dozen safety-pins.

Two yards rubber sheeting, 1½ yards wide.

One yard rubber sheeting, 1½ yards wide.

One pound cotton.

Ten yards gauze.
Fifty swabs.
Three-quart douche-bag, with glass nozzles.
One enamel douche-pan.
Two white enamel basins.
One bath thermometer.
One rubber catheter.
One glass catheter.
One douche nozzle.
Two rectal nozzles.
Six umbilical dressings and tape.
One bottle tincture of green soap.
One lubraseptic.
One bottle ergot.
One bottle lysol.
One hand scrub.
One bottle chloroform.
Boracic acid powder.
One box talcum powder.
One pair baby scales.
One tube K. Y. jelly.*

* Home Bureau, Medical House, New York City.

CHAPTER VII

LABOR

What is necessary to know in order to study the mechanism of labor?

It is necessary to know the position which the fetus holds in relation to the mother's pelvis.

How is the pelvis divided?

The pelvis is divided into quadrants: left anterior, left posterior, right anterior and right posterior.

What is the position of the fetus in the uterus?

The position of the fetus in the uterus is very much like that of a child when trying to keep warm in a cold bed. The spine is curved forward, the face is bowed toward the chest, the thighs are flexed upon the abdomen, and the arms are folded across the breast.

Define presentation.

Presentation refers to that part of the fetus which presents itself at the internal os at the beginning of labor.

Define position.

Position refers to the relation which the presenting part of the fetus bears to the four parts of the mother's pelvis. In vertex presentation the occiput may point to the front or to the back of the pelvis. The occiput never points directly forward or backward, as it usually

becomes converted into one of the four positions at the beginning of labor.

Name the presentations of the fetus.

Cephalic presentation=	{ Vertex, Face, Brow.
Pelvic, or breech, presentation=	{ Breech, Footling, Knee.
Transverse presentation=	{ Any part of the trunk, shoulder, arm, etc.

How many positions are there in each presentation?

Four positions.

Name and locate the four positions of vertex presentation.

1. Left occipito-anterior (L.O.A.). The occiput occupies the left anterior portion of the pelvis.
2. Right occipito-posterior (R.O.P.). The occiput occupies the right posterior portion of the pelvis.
3. Right occipito-anterior (R.O.A.). The occiput occupies the right anterior portion of the pelvis.
4. Left occipito-posterior (L.O.P.). The occiput occupies the left posterior portion of the pelvis.

The vertex presentation occurs in about 96 per cent. of all cases. The left occipito-anterior position is the most frequent, occurring probably in about 70 per cent. of the vertex presentations. It is usually abbreviated by physicians as (L.O.A.), or left occipito-anterior position, an expression with which the nurse will become very familiar during the course of her obstetrical training.

Name the four breech presentations.

1. Left sacro-anterior (L.S.A.).
2. Right sacro-anterior (R.S.A.).
3. Right sacro-posterior (R.S.P.).
4. Left sacro-posterior (L.S.P.).

In order to determine the presentation and the position, what must be observed?

The part of the fetus which presents at the internal os and the relation that the point of direction bears to the mother's pelvis.

Define the point of direction.

As an instance, in vertex presentations, the occiput is called the point of direction; in face presentation, the chin; in breech presentation, the sacrum; and in shoulder presentation, the scapula.

What methods are adopted in making the diagnosis of presentation and position of fetus?

Vaginal examinations, abdominal palpation, and auscultation of fetal heart.

How is the fetal head recognized by palpation?

The fetal head feels hard, and is uniform in shape, and if it is not engaged in the pelvis it is more or less movable.

How is the breech recognized by palpation?

The breech feels soft, and is irregular. It is quite different from that of the head, or cranium.

How is the back recognized by palpation?

The back feels firm, like a resisting and expanded mass which connects the head with the breech.

Name the stages of mechanism in head presentations.

Flexion, internal rotation, extension, and restitution, or external rotation. All mechanisms are accompanied by descent of fetus.

Describe flexion.

In order that the vertex, or top of the head, may present, the chin must be tilted toward the sternum, and this flexion increases as labor progresses, until the head has passed through the pelvic brim and descends into the cavity, and finally reaches the pelvic floor.

Describe the internal rotation.

After the head has descended to the pelvic floor the occiput is gradually rotated forward, in anterior cases, until it lies under the symphysis pubes. This rotation is due to the action of the muscles of the pelvic floor, which turns the head in the right direction.

Describe extension.

After the internal rotation has been completed, and with the occiput under the symphysis pubes, the chin gradually rises from the sternum and sweeps down over the posterior vaginal wall and perineum. The head is born in a state of extension.

Describe restitution.

After expulsion of the head, it is again rotated three-eighths of a circle, so that its back points to the same side that it did at the beginning of labor. External rotation is of interest to the physician, as it enables him to verify his diagnosis of position made at the beginning of labor. If the case is L.O.A., the back of the head will, after external rotation, point to the left side of the mother, as it did before labor began.

What is labor?

Labor consists of the physiological termination of pregnancy. It is the process by which the fetus, placenta, and membranes are expelled from the parturient canal, and is known by various names, such as delivery, confinement, and parturition.

When does labor take place?

Labor usually takes place two hundred and eighty days, nine calendar or ten lunar months, after the period of impregnation.

What are the causes of labor?

The causes of labor are unknown.

What is understood by the mechanism of labor?

In studying the mechanical phenomena of labor it is necessary to consider the facts: The expelling powers, those forces which prepare the way and impel the fetus through the parturient canal; the passengers, consisting of the fetus, placenta, and membranes; and the passage, which consists of the cervix, the vagina, and the vulva.

Define the forces of labor.

The main forces of labor consist of the uterine contractions, the contraction of the abdominal muscles, the diaphragm, and the muscles of the pelvis. The uterine contractions are entirely involuntary; the contraction of the abdominal muscles are generally under the control of the will, but toward the close of the second stage they become more or less involuntary.

Define the premonitory symptoms of labor.

The premonitory symptoms of labor consist of the sinking of the uterus into the pelvic cavity, which usually,

in primiparæ, occurs two or three weeks before labor takes place, and in multiparæ a week or ten days before labor. In consequence of the sinking of the uterus, the abdomen becomes less prominent in the region of the stomach, but more protuberant in the region of the umbilicus. The pressure on the diaphragm is relieved and the patient breathes easier. At the same time pressure is increased on the pelvic organs, and causes constipation and irritability of the bladder. This phenomenon is called lightening or dropping. The patient may have irregular, cramp-like pains a few days, or sometimes weeks, before the actual commencement of labor. This is probably due to uterine contraction.

Define the signs and symptoms of labor.

The characteristic signs consist of the true labor pains, dilatation of the cervix, mucus discharge slightly tinged with blood, which is usually called "the show," the rupture of the amniotic sac and the discharge of the liquor amnii.

What are the uses of the amniotic sac and the liquor amnii during labor?

The amniotic sac assists in the dilatation of the os uteri, and protects the fetus, placenta, and the umbilical cord from direct pressure on the uterine wall. The liquor amnii serves to lubricate the cervix and the vaginal canal during labor.

Define labor pains.

The labor pains represent the contractions of the uterine muscles.

How are labor pains divided?

They are divided into two classes: The false and the true labor pains.

Define the false labor pains.

The false labor pains may begin as early as three or four weeks before the termination of pregnancy. They are irregular, and of short duration, and are located mainly in the groin and the lower part of the abdomen.

Define the true labor pains.

The true labor pains begin in the lumbo-sacral region, extend around the body to the pubes, and down the thighs. They are intermittent, and occur at regular intervals of about half an hour, and are called the "cutting, or grinding, pains." As labor progresses the pains increase in frequency, duration, and severity, and are known as the "bearing-down pains."

How is labor divided?

Labor is divided into the first, second, and third stages.

When does the first stage of labor take place?

The first stage of labor begins with the true labor pains, and ends with complete dilatation of the os uteri. It is called the period of dilatation.

When does the second stage of labor take place?

The second stage of labor begins after complete dilatation of the cervical canal, and ends with the birth of the infant. It is called the period of expulsion.

When does the third stage of labor take place?

The third stage of labor begins after the birth of the infant, and ends with the expulsion of the placenta and the membranes. It is called the placental stage.

Describe the pains during the first stage of labor.

The pains during the first stage of labor are located in the lumbo-sacral region. They occur at regular inter-

vals of about half an hour, and they are called the "cutting pains." The pain at first is slight, but it increases in severity until it reaches its climax, and gradually disappears. At the time the pain is most severe the os uteri dilates, and as the pain passes the os uteri contracts, and the membranes recede. As dilatation of the os uteri progresses, the pains are longer in duration—more severe, and occur more frequently; and these are known as the "bearing-down pains." The patient, at the beginning of each pain, grasps the back of a chair or the foot of the bed, and leans heavily against it. During the interval between the pains she is usually cheerful. As time passes the pains increase in duration, severity, and become more frequent, until they occur every five or six minutes. The patient now becomes exhausted and complains bitterly that the end will never come, and begs that something be done to relieve her condition. As dilatation nears its completion she has a slight tremor, or even severe rigor. Full dilatation of the cervix is usually announced by the rupture of the amniotic sac and an audible gush of the liquor amnii.

Describe the pains during the second stage of labor.

The patient is generally in bed. The pains are severe, and last fifty to one hundred seconds, and they occur every three or five minutes. As the pains occur the patient "bears down" with all her strength; her face is suffused with blood, and it is almost cyanotic; her neck swells, and the large blood-vessels pulsate violently. The patient does not complain as much now as during the first stage, but she devotes her entire energy to hasten delivery, which aids to force the head down into the vagina. The perineum now begins to bulge outward, and the anus opens so that the anterior rectal walls lie

exposed. The pains are about two minutes apart and very severe, the vulva begins to open, and soon the wrinkled scalp of the infant becomes visible. The pains now occur rapidly, almost continuously, and finally, with a sharp, agonized shriek from the patient, the head is born. This pain is followed by a short interval of rest, after which one or two more pains occur, and the body of the infant is expelled, accompanied with liquor amnii and blood. The infant gives a sneeze, or gasp, and soon cries lustily. The patient's pains cease, and the second stage of labor ends, while the patient expresses her relief. The duration of the second stage greatly depends upon the dilatability of the perineum.

Describe the pains during the third stage of labor.

After the birth of the infant the placenta is separated from the uterine wall, and lies loose in the cavity of the uterus. The uterus can now be felt contracting, and it feels like a round, hard ball, located above the pubes. There may be an interval of fifteen to twenty minutes, in which the muscles rest from their exertions; slight pains then occur again, and the placenta and membranes are expelled, and the uterus contracts into a hard ball, about the size of a baseball, behind the pubes, and the third stage is at an end.

Define the duration of labor.

The average duration of labor in normal cases is about ten hours. In some cases labor may be over in one hour's time, or it may last twenty-four hours or longer, without serious consequences to mother or infant. The greater part of the time is occupied by the first stage of labor.

CHAPTER VIII

PREPARATIONS AND CARE OF PATIENT DURING LABOR

Mention the nurse's duties after her arrival on an obstetrical case.

The duties of the nurse after her arrival on an obstetrical case consists of taking and recording the patient's pulse, respiration, and temperature, and noting the character and the frequency of the labor pains. She should then place plenty of water in covered kettles on the stove to boil, make the obstetrical bed, after which she should prepare the patient and make preparations for the physician.

How may the nurse ascertain when the patient is in true labor?

True labor may be ascertained as follows: 1. When there is a show, which occurs a few hours before labor. 2. By the location of the pains—if they begin in the back, extend around to the front of the abdomen, at the same time the uterus hardens or contracts, and the pains occur at regular intervals, accompanied by distinct "bearing-down" pressure. 3. By dilatation of the os uteri, etc., when it is safe for the nurse to consider the patient in true labor. The nurse is not allowed to make a vaginal examination without instructions from the physician. In case of rupture of the membranes, the nurse should notify the physician immediately.

Describe the location of the lying-in room.

The room selected for labor should be located in the quietest part of the house—away from the kitchen odors, and as near to the bath-room as possible. The room should be large, sunny, properly ventilated and heated, and there should be proper adjustments for plenty of light at night-time. The nurse should also ascertain whether the room has previously been occupied by a patient suffering from any infectious or contagious disease. In case the room has been occupied by a patient with a malignant disease, and has not been thoroughly disinfected, another room must be chosen.

How should the lying-in room be prepared?

The room should be thoroughly aired and cleaned. All unnecessary furniture, rugs, heavy draperies, and other articles upon which dust collects, should be removed. In case there is a carpet on the floor, it should, if possible, be removed; otherwise it must be thoroughly swept and wiped off with a strong solution of bichloride of mercury. The carpet in front of the patient's bed should be protected by an oil-cloth, or layers of newspapers, covered with a sterile sheet, tacked down securely, so as to prevent its slipping. The doors and woodwork of the room should be scrubbed and wiped off, also, with a bichloride solution.

What constitutes the necessary furniture of the lying-in room?

A single or obstetrical bed for the patient.

A single bed, or a comfortable couch-bed, for the nurse, unless she is to occupy a bed in an adjoining room.

A bassinette, or basket, for the infant, unless it is to occupy a crib in an adjoining room.

A dresser.

A wash-stand, properly equipped with pitchers and basins.

An extra slop-jar, or covered enamel pail.

A kitchen table.

Two plain, wooden chairs.

A large, comfortable rocking-chair, for the convalescent patient.

Describe the obstetrical bed.

The obstetrical bed should be high, single, and provided with good springs and a firm mattress, in order to prevent uncomfortable sagging in the middle. The period of convalescence, especially after a normal labor, is very trying to the patient, and unless her bed is comfortable it may prove very difficult to persuade her to remain there the length of time required. Therefore, a hair or a cotton mattress is most desirable. The "feather bed" should not, in any case, be used on the bed in the lying-in room.

How should the obstetrical bed be prepared?

The bed should be placed so that it is approachable from both sides; the head and the foot of the bedstead should be covered with clean sheets, securely pinned with safety-pins. In case of box-springs, the valance should be removed, or pinned up securely, and the sides of the springs should be protected by coverings of enamel-cloth. During the time of labor two table-leaves, or boards, should be placed in the center of the bed, between the mattress and the springs, in order to prevent the bed sagging. The mattress should be covered with a large

rubber sheet, or an enamel-cloth, and pinned securely at the sides and corners, so as to avoid wrinkles, over which a clean, large sheet should be spread securely and tucked under the mattress. Upon this place a rubber sheet, over which a draw-sheet should be smoothly tucked under the mattress. In order to protect the bed from the copious discharge which usually takes place during the second and third stages of labor, a sterile rubber sheet and another draw-sheet should be securely pinned above the original obstetrical bed, directly beneath the patient's buttocks. After labor is over, the soiled draw-sheet, and rubber sheet are easily removed, and quickly replaced by a sterile obstetrical pad without disturbing the first bed beneath the patient.

The nurse, however, in many homes will find a very small or limited supply of bed-linen. In order to economize, the obstetrical bed may be made as follows: The mattress should be covered first with a large rubber sheet, or enameled cloth, and pinned securely, over which should be placed a clean, large sheet, tucked well under the mattress. In order to protect this during the second and third stages of labor, place a sterile piece of rubber sheeting, over which place a sterile, large sheet. After labor is over remove the soiled sheet and rubber, and adjust a sterile obstetrical pad under the patient's buttocks.

Describe the nurse's care and treatment of the patient during the first stage of labor.

The patient during the early part of the first stage of labor is usually allowed to assume any position she pleases. The nurse, by cheerful words and a hopeful manner, should encourage the patient to bear her pains bravely and quietly. She should advise her to walk

around the room, in order to aid the bearing-down pains, and at the same time divert her mind from them. The patient should not be allowed to become fatigued, and during the pains she should be instructed not to strain or bear down. During the early stage of labor this does no good, and it has a tendency to exhaust the patient's strength. If the first stage of labor is prolonged, the patient may be given light fluid diet every two hours, such as chicken-broth, beef-tea, etc. In case labor continues tediously over night, it is the nurse's duty to see that her patient, as well as herself, receives some rest, in order that both may be better able to endure the strain during the delivery. The nurse necessarily *must* be able to complete tedious duties after the birth of the infant. At the beginning of labor the nurse should see that the patient is given an enema, and that she voids urine at least every four hours. In case the patient does not urinate, she should report the fact to the physician. In case of catheterization, the nurse should always use a small rubber catheter.

At the time the membranes are ruptured, in case the physician is not present, the nurse should place the patient in bed, and apply a sterile pad over the vulva, and notify the physician at once. All relatives and friends should be requested to remain outside the lying-in room as soon as the membranes have ruptured.

What are the first preparations for the patient during labor?

As soon as it is known that the patient is in labor, the nurse should administer a soap-and-water enema, to flush the bowels, which will render labor not only easier, but infinitely more cleanly. The enema should not be neglected, and it may be repeated once or twice, in case

labor is tediously slow. Strict attention should be given to the patient's bladder. She should void urine every four hours.

Why is it important that the patient's bowels should be thoroughly flushed?

It is of the utmost importance to empty the bowels in order to lessen the pressure upon the rectum during the second stage of labor, which is very great; and often, as the head of the infant comes down, the contents of the bowels, if not emptied, are forcibly expelled. This not only leads to great annoyance for the physician, through the danger of infection from the defecation, but it also greatly distresses the patient.

What constitutes the nurse's final preparations of a patient for labor?

The nurse should cleanse the patient's external genitals with special care; the hair on the vulva should be closely clipped or shaved, especially around the perineum. The patient should be given a full shower-bath—a bathing, ordinary hand-spray, or a pitcher, in the absence of a shower-bath, will answer the same purpose, so long as the body is well drenched with warm water, and briskly lathered with green soap, with the aid of a bath-brush. Particular care should be given to the area between the ensiform cartilage and the knees. The vulva should also be thoroughly lathered, and the smegma, if any, removed from the clitoris, after which the patient should stand under the shower and all the lather should be thoroughly removed by friction. After the bath, wash the area between the ensiform and the knees with a solution of bichloride, 1 to 2000, although many physicians prefer a solution of lysol, one per cent. in strength.

Care must be taken so that none of the antiseptic solutions used flow into the vagina; and in bathing the anal region, the nurse should always wipe downward from the vulva. A sponge once used to cleanse the anus should not be used for bathing the vulva orifice, but should be thrown in the basin for soiled dressing.

After the patient's bath, a sterile pad should be applied to the vulva, supported by a T-binder, after which she should be dressed in a clean night dress, bathrobe, and slippers. Her hair should be neatly braided in two braids. After these preparations, the patient should be instructed not to use the water-closet, or in any way touch the external genitals with her soiled hands. She should, therefore, be provided with a sterile vessel or a slop-jar, instead of using the water-closet.

The nurse meanwhile, should see that the lying-in room is warm, light, and well ventilated. She should place all supplies conveniently near the patient's bed. Above all she should have an ample supply of sterile, cold and hot water at hand in sealed bottles or kettles.

How should the patient be prepared in case there is not time to give a full bath?

In case of emergency, and the time is limited, the nurse should first clip the hair on the vulva, after which the areas between the ensiform and the knees should be given a thorough bath with sterile water and tincture of green soap. The area should then be cleansed with a solution of bichloride, 1 to 2000, or a solution of lysol, one per cent. The external genitals should be thoroughly soaped, and the smegma—if any—should be removed from the clitoris, and care must be taken that none of the antiseptic solutions flows into the vagina.

Describe the nurse's preparations for the physician.

The nurse should have plenty of water in readiness for the physician to wash his hands, together with a supply of green soap, nail cleaner, sterile nail-brush, etc. She should also have an antiseptic solution for soaking his hands, prepared according to his practice, which the nurse should first inquire about. Usually the hand solutions required consist of lysol, one per cent., or bichloride 1 to 2000. Some physicians sterilize their hands, and lubricate the examining fingers with sterile vaseline, while others use sterilized rubber gloves. In case a sterilized operating gown or apron cannot be obtained, the nurse should use a sterilized sheet as a substitute for the physician.

How can a sterile sheet be arranged to serve as a substitute for an operating-gown?

The nurse, after taking a sterile sheet lengthwise, should fold over one-third of the sheet, after which, place the sheet across the front of the body, directly under the armpits, then fasten with safety pins in the back and in front, so as to prevent the trailing of the skirt of the improvised gown. The nurse should then bring the two upper corners of the sheet over the shoulders and arms; pin the edges together on the upper part of the arm, so as to form a short sleeve, and lastly, pin the edges of the sheet together in the back about the waist-line.

Describe the preparation of the patient for an abdominal examination.

The patient should be placed on her back, preferably on a couch, otherwise on the right side of her bed, as near the edge as possible. A sheet should be thrown over the

patient's limbs so as to cover the pubis, and extend down over the feet. Her night-gown should be drawn up over the chest, and covered by a sterile towel, so that only the abdomen is exposed for examination.

Describe the preparation for a vaginal examination.

Remove the pad from the patient's vulva, and carefully bathe the external genitals with sterile water and tincture of green soap; and rinse with a solution of bichloride, 1 to 2000. The nurse should instruct the patient to flex, and separate her knees, at the same time the nurse should place a sheet on the bias over the patient, with its center over the pubis. The opposite corners of the sheet should be wrapped around each leg so as to cover them. One of the remaining two corners of the sheet should then be drawn over the patient's face, and the other corner should be used to form a flap between the knees. After the physician has washed, and sterilized his hands, the nurse is usually required to adjust the sterile vaseline from a tube on his examining fingers, before he inserts them in the vaginal opening. Following the examination, the nurse should cleanse the vulva and place a sterile pad over the parts. These aseptic precautions should be observed before and after each vaginal examination.

What should the patient's diet consist of during the first stage of labor?

The patient's diet during the first stage of labor should consist of liquid nourishment and light semi-solids, such as chicken-broth, beef-tea, toast, etc. After labor begins, the patient usually loses her appetite, in the large proportion of cases. She should not, however, be allowed to abstain from food, as it will result in weakness and faintness, especially if labor is prolonged. In such cases the

patient must be urged to partake of some broths, or beef-tea. The nurse, also, should bear in mind the ill effects of over-feeding the patient during labor, since during the severe pains, the physician usually administers chloroform to the patient, at least to the obstetrical degree. Over-feeding would result in the patient's vomiting.

Describe the general care of the patient during the second stage of labor.

As soon as the patient arrives in the second stage of labor, the nurse should place sterile sheets on her bed, in case they are not already there. She should also dress the patient in a sterile gown, stockings, or leggings, and put her to bed. A sheet or a roller-towel should be fastened to the foot of the bed, upon which the patient may brace herself during severe pains. The nurse should now place all antiseptic solutions and sterile supplies conveniently near the patient's bed. Her duties during delivery consist chiefly in waiting upon the physician, renewing of supplies, such as sponges, solutions, and adjusting towels, sheets, etc. She may also be required to administer the chloroform for the physician.

When should the patient go to bed?

In all cases the patient should be placed in bed as soon as the membranes are ruptured, and always at the beginning of the second stage of labor.

How should the nurse prepare the bed and the patient at the beginning of the second stage of labor?

After the bed has been prepared with sterile sheets, the patient should be dressed in a sterile gown and white stockings or leggings. The gown, if long, should be rolled up smoothly under the patient's arms, so as to

prevent soiling it during the stage of expulsion, which now begins.

What position of the patient is generally adopted during delivery?

The patient usually lies on her back, with her knees flexed. Some physicians prefer the patient to lie on her left side during delivery.

Describe the position of a patient on her side during delivery.

The patient should be placed on her left side, with the hips near the edge of the bed. The thighs and the legs should be flexed, and a pillow, covered with a sterile towel, should be placed between the patient's knees.

What may the nurse do to aid the patient during her bearing-down efforts?

The nurse often is compelled to hold the patient's hands, although this is not advisable, as the nurse is required to wait upon the physician and keep her hands sterile. A sheet or roller-towel should, therefore, be tied to the foot of the bed, upon which the patient may brace herself.

What may be done to aid the patient's comfort?

The nurse may encourage the patient with reassuring words, rub her back, occasionally fan, and bathe her face and hands with cool water. In case of cramps in her legs, the nurse should stretch the patient's limb out forcibly, pull the foot toward the knee, and rub the cramped muscles.

What are the next duties of the nurse?

The nurse should have plenty of sterile hot and cold water in readiness. A table or the dresser should be

covered with a sterile sheet or towels, upon which the sterile supplies should be placed, including: towels, sheets, sponges, obstetrical pads, vulvar pads, absorbent cotton, gauze, tapes for tying the infant's cord, warm saturated solution of boric acid, and gauze sponges for the infant's eyes and mouth; nitrate of silver solution, one per cent., an eye-dropper, and a tube of white vaseline, or albolene. There should also be near at hand alcohol (95%), fluid extract of ergot, brandy, a graduated medicine glass, teaspoon, a glass of drinking water, wine-glass, and a tested hypodermic syringe, a basin containing sterile artery forceps, and scissors. A sterile douche-bag and sterile douche-pan are also necessary; the douche-bag should be hung near the patient's bed, so that it may be quickly filled by such solutions as the physician may order in case of emergency, such as a postpartum hemorrhage, etc.

The nurse should prepare one basin of antiseptic solution for the physician's hands, and one basin containing sterile sponges. The solutions should be made according to the physician's practice—usually bichloride 1 to 2000 or lysol one per cent. There should be a sterile receptacle for the placenta, and a slop-jar or pail for soiled sponges, etc.

The infant's basket should contain a hair pillow, hot-water bag, and a warm, woolen blanket to receive the infant. The nurse should also have at hand a bath-tub, bath thermometer, plenty of ice, hot and cold water, in case the infant is asphyxiated.

Describe the succeeding duties of the nurse.

The nurse should place a sterile obstetrical pad, or the physician's Kelley pad, under the patient's buttocks. If she is dressed in a sterile gown and leggings, the nurse

should also place a sterile towel over the abdomen, and cover the body with a sterile sheet.

When is chloroform usually administered?

The physician usually administers chloroform, to the obstetrical degree, when the patient's pains are the strongest and most frequent. In normal cases the nurse is often called upon to administer the anesthesia.

Mention some new anesthetics used during labor.

Scopolamine-morphine administered hypodermically in small doses; and nitrous oxid gas-oxygen administered with a nasal inhaler, are the latest anesthetics used during labor. (See Chapters XIX-XX.)

What is meant by the term, "obstetrical degree"?

The term signifies that the patient is not completely anesthetized, or given enough chloroform so as to make her totally unconscious.

What should be in readiness for the anesthetizer?

Chloroform or ether, according to the physician's practice, a mask, or an improvised cone; white vaseline, sponges, clean towels, kidney basin, tested sterile hypodermic syringe, heart stimulants, sterile medicine glass, sterile water, and alcohol, 95%. The heart stimulants and hypodermic syringe are necessary in case of emergency of heart failure resulting from anesthesia.

How should an improvised etherizing cone be made?

A cone may be made as follows: Take a piece of newspaper, or any stiff paper, twelve to fourteen inches in length, ten to twelve inches in width, and fold it once so that it is five or six inches wide, and fasten the ends together with safety-pins. This should be covered with muslin or gauze, both inside and outside.

The cone should fit comfortably over the patient's mouth and nose. In the inside of the cone should be placed a sponge of absorbent cotton, which is to be saturated with chloroform or ether, as directed by the physician, in case the nurse administers the anesthesia. Many physicians combine chloroform and ether.

How is the patient prepared for an anesthetic?

The nurse should remove the patient's jewelry and false teeth, if any, and also arrange her clothing so as not to interfere with her respiration. White vaseline or albolene should be applied to the patient's nose, lips, and chin, in order to prevent irritation of the skin from the use of chloroform or ether. A towel should also be placed over the patient's eyes, to protect them.

What are the chief duties of the nurse during delivery?

She should assist the physician, furnish the required sterile supplies and instruments, renew sponges, solutions, and remove soiled towels, sheets, etc.

When is the nurse usually required to administer the chloroform?

On a normal case of labor, while the infant is passing through the vulva.

Describe the administration of the anesthesia.

In case of absence of the Esmarch inhaler, the nurse should improvise an ether cone, or a handkerchief, folded square, may serve the purpose. A long slit should be cut in the side of the cork of the chloroform bottle, so as to arrange for the fluid to drop slowly. Before applying the cone the patient's face should be well anointed with vaseline or cold cream, and a towel placed over her eyes. At the beginning of a pain the nurse should

drop about fifteen drops of chloroform upon the cotton within the cone, or upon the folded handkerchief, and hold it over the patient's nose and mouth. In a few moments a little more chloroform should be added to the mask, which should be removed from the face at the end of each pain. The administration should be more frequent toward the end of the second stage, but chloroform should be discontinued immediately after the head is born. The nurse should follow the physician's instructions regarding the amount of the anesthetic given, etc.

Describe the different stages of chloroform anesthesia.

The patient during the first stage is restless, and attempts to remove the cone or mask from her face; there is a ringing sound in her ears, coughing, and later exhilaration, followed by content. Although apparently unconscious, the patient is still conscious of all conversation about her. During the second stage, however, she becomes very restless and talks considerably. She is liable to become nauseated and often vomits, in which case the nurse should increase the administration of chloroform. The patient's face may become flushed, the pupils dilate and become mobile, in case nausea is not present, and the pulse is accelerated as she becomes unconscious. During the third stage the patient's respirations are regular, the pupils contract, the pulse becomes slightly rapid, full, and of a good quality, and all the muscles of the body relax.

What must be observed in administering an anesthesia?

The patient's pulse, respiration, contraction or dilation of the pupils, and the general appearance of the countenance.

What constitutes the dangerous symptoms in administering an anesthetic?

Rapid, irregular pulse, irregularity or shallowness of the respiration, and a pallid or cyanotic countenance.

What should the nurse have in readiness as soon as the infant's head is born?

She should have warm sterile water, and gauze sponges ready to cleanse the infant's eyes and mouth.

Describe the care of the patient during the third, or the placental stage.

As soon as the infant is born, the third, or placental, stage begins. The nurse should now place her hand on the patient's abdomen, grasp the uterus, and hold it firmly. She should note whether it is soft or hard, and if too spongy she should gently massage the uterus. In case the nurse is not able to ascertain the true condition of the uterus, she should not hesitate to consult the physician.

What is the usual size of the uterus immediately after the infant is born?

It corresponds to the size of a medium-sized cocoanut.

What should the nurse have in readiness at the time the infant is expelled?

She should have a basin at hand, containing sterile umbilical tape, and scissors for the physician's use in cutting and tying the umbilical cord of the infant.

Mention the succeeding duties of the nurse.

After the infant is separated from the mother the nurse should wrap it in a warm blanket and place it on its right side in the basket equipped for the infant, gen-

erally in a warm, airy room, adjoining the patient's, if possible.

Why should the infant be placed on its right side immediately after its birth?

It should be placed on its right side, in order to favor the prompt closure of the *foramen ovale*.

What must the nurse closely observe about the infant after placing it in its basket?

She should frequently observe the infant, in order to see that it does not choke, and at the same time she should examine the umbilical cord to see that it is securely tied and not bleeding. The infant should be kept warm and out of drafts, etc.

After the infant is removed from its mother what constitutes the nurse's next duties?

She should carefully remove all soiled dressings and towels about the patient, renew solutions, and place a sterile obstetrical pad beneath the patient's buttocks, and a sterile basin under the vulva to catch all discharges. The nurse should also observe and note the amount of blood on the soiled pads, etc., in order to estimate the amount lost. The patient should be made comfortable as soon as possible, and covered with a sterile sheet and a clean, warm, woolen blanket.

What must the nurse observe while holding the patient's uterus?

She should observe whether the uterus is hard or not, and when it relaxes a little she must prevent it becoming soft or spongy and filled with blood. The nurse should frequently observe the vulvar-pad in order to detect any excessive flow of the lochial discharge. At the same

time she should watch the expression of the patient's countenance and the character of the pulse. A running or rapid pulse usually precedes a hemorrhage.

What should the nurse do in case of a hemorrhage?

In case of a hemorrhage, the nurse should massage the uterus gently, but firmly.

Describe the massage of the uterus.

Massage of the uterus consists of placing the hand firmly over the uterus, with the thumb on the front and the fingers on the back of the uterus, and kneading it with a rotary movement.

What symptoms indicate the separation of the placenta from the uterus?

At the time the placenta separates, the uterus becomes very hard, or contracted; it now rises up under the nurse's hand, at the same time the umbilical cord appears slipping from the vulva. These contractions of the uterus result in loosening and expulsion of the placenta.

What is the duty of the nurse during the expulsion of the placenta?

The nurse usually holds a sterile basin against the perineum. The umbilical cord is dropped into the basin, after which the placenta is gently expelled from the vulva and placed in the receptacle. The membranes should be extracted with the utmost gentleness and deliberation, so as not to tear the parts off the uterus. The nurse should place the basin containing the placenta where the physician can examine the placenta and its membranes in order to observe whether it is complete or not.

What are the duties of the nurse after the expulsion of the placenta?

After the placenta has been expelled, together with the membranes, the physician examines the patient's vulva, vagina, and cervix, in order to observe any laceration of the birth canal. In case there is no laceration, the physician usually attends to the fundus for about fifteen minutes. This interval gives the nurse time to remove the soiled linen, pads, etc., about the patient, and renew the solutions.

The patient should now be cleansed and the abdominal binder adjusted. The nurse should thoroughly sterilize her hands before touching the patient. In bathing the external genitals, great care and gentleness must be exerted, so as to prevent injury or infection of the parts. As soon as the parts are bathed a sterile guard should be applied to catch the lochial discharges. The blood-stains should now be washed off the abdominal region, and on the thighs and the buttocks. In turning the patient on her side to cleanse the buttocks, the nurse should place one hand on the uterus, so as to prevent it from relaxing, and at the same time she should instruct the patient to keep her legs firmly together. The soiled sheets, towels, etc., should be removed, and a sterile obstetrical pad should be placed under the patient's buttocks. In case the gown is soiled, it should be removed and replaced by a warm, sterile gown. In case an abdominal binder is used it should be firmly adjusted, and pinned from above downward.

Why should the patient keep her knees firmly together whenever turning on her side, or in being lifted up in bed?

It is of the utmost importance, so as to prevent air

entering the vaginal orifice, which might penetrate the large veins of the lacerated uterus, and result in air-embolism.

Is air-embolism fatal?

It is usually fatal.

Mention the instruments used in perineorrhaphy.

The necessary instruments in perineorrhaphy, according to Dr. DeLee, are as follows:

Two pairs of scissors.

Two tissue forceps.

Four artery forceps.

One needle-holder.

Four curved needles.

Two vaginal retractors, one large and one small size.

Vulsellum forceps.

Long uterine packing forceps.

Catheter, and in case of douche it is usually a uterine douche.

Describe the nurse's preparation for perineorrhaphy.

The nurse should renew the solutions; sterilize the physician's instruments and sutural material. At the same time she should see that there is plenty of both hot and cold sterile water, sponges, and towels. A good light is absolutely necessary; the patient is usually placed across the bed in a lithotomy position, although many physicians prefer the patient placed on a table for the operation, in front of a window or beneath the electric light.

Describe the nurse's duties during the operation.

The nurse must always be in readiness to anticipate and to carry out the physician's instructions, such as

renewing of solutions, etc. It often happens that there are not enough assistants present to aid at the operation. The nurse should therefore prepare everything, and arrange the supplies as for any major operation—place the solutions, instruments, sterile sponges, etc., convenient for the physician, since the nurse may be called upon to administer the anesthesia.

How many degrees of laceration of the perineum are there?

There are three degrees: 1. Through the fourchette.
2. Down to but not through the sphincter of the anus.
3. Through the anus into the rectum.

What are the nurse's duties after the operation?

After the patient has been cleansed and made comfortable in bed, the nurse should take her pulse, respiration, and temperature, and record it on the chart. The room should be properly ventilated and darkened, after which the nurse may still continue to place the room in order as quietly as possible. She should now avoid disturbing the patient, since she requires absolute rest.

All soiled towels, sheets, etc., should be gathered together and placed in the bath-tub in cold water, so as to remove all the blood-stains. Later the clothes may be sent to the laundry. The nurse should never use hot water to soak the bloody clothes, as heat coagulates the blood in such a manner as to leave permanent yellow stains.

The instruments should be scrubbed with soap and warm water, rinsed, and thoroughly dried. The Kelley pad, if used, must also be washed carefully with soap and water, and rinsed with a solution of bichloride, 1 to 1000.

CHAPTER IX

CARE OF PATIENT DURING THE PUERPERIUM

What must the nurse always remember in caring for a patient during the puerperal state?

The nurse must adopt aseptic measures about everything that concerns the care of the patient's genitals and breasts, and the care of the infant's eyes, nose, mouth and navel, or umbilicus. At no time during her attendance of an obstetrical case should she relax antiseptic precautions in the care of both mother and infant.

Is it necessary for the nurse to keep a bed-side record on a normal obstetrical case?

Yes, it is always advisable for the nurse to keep a careful record on a normal case. Complications might arise when the physician or nurse least expect them, and the history sheet of the case saves the nurse, at least, much trouble and confusion.

Describe the nurse's history, or record-sheet.

The history or record-sheet should contain the physician's orders; number of visits; patient's pulse, respiration, and temperature; general condition; administration of stimulants, medications, nourishment, sleep; defecations, amount of urine, character of each; enemata and catheterization, if any, amount and character of lochial discharge, clots, or shreds of membrane, if any, etc., should be carefully noted on record sheets, together with date and hour, and kept for the physician's inspection. After the patient's bladder is emptied each morning the

nurse should measure the height of the fundus of the uterus from the pubis, and enter it on the record sheet.

Describe the patient's pulse and temperature.

The pulse usually increases during labor, although soon after delivery it becomes less rapid, and generally drops down to normal, or even below normal. The decrease in the pulse-beat is considered a favorable symptom. The patient's temperature rises slightly during the first twelve hours after labor.

How often should the patient's pulse, respiration, and temperature be taken?

The pulse, respiration and temperature should be taken three times a day, or every four hours, in case the patient has a fever.

What general observations should the nurse make of the patient during the first twenty-four hours after labor?

She should observe the patient's facial expression, restlessness, rapidity and strength of pulse, firmness of uterus, and the amount and color of the lochial discharge. Headache is a very important symptom, and should always be reported to the physician.

How often should the patient's pads or guards be changed?

The vulvar pads or guards should be changed every four hours, or more frequently, if necessary, especially following each defecation and urination.

What should the nurse observe every time the vulvar pads are changed?

The color, odor, and increased or decreased amount of the lochial discharge.

How often should the patient's genitals be bathed?

Every time the pads or guards are changed.

What preparations should be made for bathing the external genitals?

The patient's gown and bed clothing should be arranged; the lower safety-pins of the binder should be removed, so as to slip it up over the thighs, after which the douche-pan should be placed under the patient's buttocks. The nurse should now disinfect her hands, the same as for preparing for any surgical dressing, after which she should cleanse the vulva. After gently separating the labias, with the thumb and forefinger, she should pour from a pitcher a warm solution of lysol, one per cent., or a solution of bichloride 1 to 2000 as ordered by the physician.

The vulva must be carefully dried with sterile, absorbent cotton sponges. In using the sponges, the nurse should always wipe from above, downward toward the rectum, after which the sterile guard or vulva pad should be applied. In case the T-binder is not used, the pad should be pinned to the abdominal binder, both in front and back. It must not be pinned too tightly, and the binder must not become wrinkled or soiled thereby.

What must be remembered in case the patient has stitches?

In case of laceration and stitches, the nurse must be very careful in removing the guards, and in bathing the genitals. In using the cotton sponges, they must not be allowed to catch and pull the free ends of the sutures. This might cause great harm, and result in tearing away of the stitches. In case the patient complains of acute pain about the region of the sutures, the nurse should

examine them under a good light. If any of them appear to be breaking, or cutting through the tissue, she should inform the physician. Sometimes there appears considerable swelling of the vulva about the second day after labor, in which case the physician may order warm, moist, medicated applications to the parts.

What is meant by the involution of the uterus?

Involution consists of the process by which the uterus resumes its normal size after birth.

Describe the process of involution of the uterus.

The process consists partly in the contraction of the uterus, and partly in the destruction of certain of the tissues of the uterus through the lochial discharges, and the general circulation of the patient.

Describe the daily measurements of the fundus uteri.

The uterus, after labor, weighs about two pounds, which through the process of involution is reduced to a weight of about two ounces. As a result the nurse can daily observe this decrease in size by palpation, measuring from the fundus uteri to the pubis. On the first day after labor the fundus is high, even above the umbilicus; on the third day it is eight fingers above the pubis; on the fifth day it is five fingers above the pubis, and on the tenth day it is usually down to the symphysis pubis.

What is the usual length of time required for the involution of the uterus?

The normal process of involution requires about six weeks.

What is meant by sub-involution?

Sub-involution is a term used to describe the condi-

tion which exists when involution of the uterus fails to become complete.

Describe the involution of the vulva, and the vagina.

Both the vulva and the vagina after labor are dark, bruised, and often torn, and usually swollen more or less. The process by which they resume their normal condition and size is known as involution.

What are the after-pains following labor?

After-pains consist of painful contractions of the uterus, which follow labor usually on the second and third days. They are due to lack of tonicity in the uterine muscles, or to the presence of a blood-clot which has formed within the uterine cavity, or possibly to a piece of the placenta, or membrane left therein. After-pains are more common in women whose tissues are soft and flabby, and appear frequent in multiparæ and more infrequent in primiparæ.

After-pains, however, are beneficial since they expel clots, or foreign tissues, etc. They are intermittent, and accompanied with hardening, or contraction of the uterus. The after-pains are aggravated during the infant's nursing, due to the nervous stimulation of the uterus through suction of the nipples. The pains are often very distressing to the patient.

What should the nurse do to relieve the patient's after-pains?

The nurse may apply hot fomentations over the region of the uterus. In case the pains are frequent, and very severe, the physician should be informed. He may find it necessary to prescribe an anodyne, or in case of a large clot, he may have to remove the foreign substance from the uterus.

What is the lochia?

Lochia is the term given to designate the discharge from the uterus after birth, which continues for about three weeks.

Describe the character of the lochial discharge.

The lochia during the first few days following labor is of a bright red color known as *lochia rubra*. It consists chiefly of blood, which has oozed from the placental site on the uterine wall and become mixed with a small amount of mucus and shreds of decidua. Between the sixth and seventh day the lochia gradually changes to a slight, yellowish color, due to an admixture of a considerable amount of serum, epithelial, and cylindrical cells, known as the *lochia serosa*. Finally the lochial discharge becomes muco-purulent, scant, and assumes a greenish-yellowish color, after which it is known as the *lochia alba*.

How soon after labor should the infant be put to the breast?

The infant should be put to the breast as soon as the mother has become rested—usually eight hours after delivery.

Describe the care of the patient's breasts.

After the patient has had about eight hours of rest, the nurse should prepare the breasts by gently bathing them with warm sterile water and castile soap, followed by an application of alcohol, 95%. Before and after each nursing the nipples should be bathed with sterile water. Always use sterile, absorbent cotton sponges in bathing off the nipples so as not to allow the fingers to come in contact with them. After each nursing anoint the nip-

ples with sterile alboline or with cocoa-butter, and cover with sterile gauze.

How often should the infant nurse?

The infant should be placed to the breast about eight hours after birth, and thereafter every four hours during the first two days. After forty-eight hours, the infant should be nursed every three hours between 7 A.M. and 10 P.M., with a nursing at 2 A.M. The time required for each nursing should average ten to fifteen minutes.

What is the first secretion from the mother's breast called?

The first secretion is known as colostrum.

Describe the colostrum.

Colostrum consists of a yellowish or whitish fluid, which contains more albumin than casein; it is also richer in sugar and fat than the subsequent milk.

What value is the colostrum to the infant?

The colostrum serves as a laxative to the infant.

How soon after labor does the flow of milk begin in the breasts?

The milk usually appears in the patient's breasts about the third or the fourth day after labor.

What can be done to relieve the excessive flow of milk during the first day or two, after it comes in the breasts?

The nurse should apply the breast-binder snugly over the breasts and pin it evenly about the fourth day. She should also follow the physician's orders restricting the fluid diet of the patient to that of soft or dry diet. Saline cathartics, which produce watery defecations of

the bowels also, aid in reducing the excessive flow of milk in the breasts.

How soon after labor must the patient's bladder be emptied?

In case the patient does not void urine voluntarily within twelve hours after labor the bladder should be relieved by catheterization, and repeated every eight hours until the parts resume their normal functions.

Is the nurse justified in catheterizing a patient without the physician's order?

No, she should first have the order to catheterize the patient, since in case of cystitis developing she would be severely criticised.

Mention some of the causes which prevent the patient voiding urine after labor.

During labor the patient's urethra and bladder become more or less bruised and swollen, many times the meatus is lacerated. Inability to void urine in the horizontal position; atonic condition of the muscles of the bladder, etc. The urine, therefore, may be partially or wholly retained.

What should be done to encourage the patient to void urine before resorting to the use of the catheter?

1. The nurse should place the patient on the douche-pan containing water as hot as possible, cover her and leave the room for a few minutes.

2. The sound of running water poured from one pitcher into another pitcher.

3. A pitcher of rather warm, sterile water is encouraging if poured slowly and gently over the patient's vulva.

4. Application of hot fomentations over the pubic region.
5. Light pressure of the hands over the region of the bladder.
6. Some physicians allow the patient to be raised up to a half-sitting position.
7. Enema may also be administered.
8. In case the above methods fail the catheter must be resorted to and the urine drawn from the bladder.

Why should the nurse avoid the use of the catheter as much as possible?

The use of the catheter, especially following labor, is always attended with danger of infecting the patient. It may also cause cystitis.

Describe the preparations for catheterization.

The nurse should first sterilize the catheter by placing it in a new enamel or agate-ware basin and boil it in water five minutes. In case the catheter is rubber, the nurse should carefully watch it boil. She should then prepare solutions of lysol, one per cent., bichloride 1 to 2000, or boracic acid solution, two per cent., sterile, absorbent cotton sponges, a sterile basin containing catheter, and a sterile basin for receiving the urine, and a tube of white, sterile vaseline. The supplies and solutions should be placed on a table near the patient's bed.

The patient should now be placed on the douche-pan and prepared the same as for a surgical dressing, after which the nurse should sterilize her hands thoroughly, bathe the patient's vulva carefully, especially around the meatus, with lysol solution, followed with sterile boracic acid solution.

Describe the methods of catheterization.

The nurse, after preparing the patient, should again make her hands sterile, separate the labias of the vulva with her thumb and index-finger, wipe off the meatus or urethral orifice with sterile, cotton sponges dipped in boracic acid solution, or sterile water. She then should apply sterile vaseline to the tip-end of the catheter; with the thumb and the index-finger she then proceeds to separate the labias, after which she locates the meatus, and slowly inserts the catheter by sight, and in no case using force. The urine should be caught in the sterile basin so as to note the character and amount.

What precaution should be taken before insertion of a glass catheter?

The glass catheter should be inspected carefully before insertion so as to make sure that it is not cracked. Every precaution should be observed so that the inserting end of the catheter does not come in contact with anything which is not sterile, before its insertion.

How should the catheter be inserted and removed?

In case of a curved glass catheter it should be tipped downward gently and slowly, after which it should follow the urethral canal without force until it penetrates the bladder, which is announced by the flow of urine. In removing the catheter it is wise to place the finger over the exit, so as to prevent any urine which remains in it soiling the bed, etc.

Are vaginal douches usually ordered in normal cases of confinement?

In normal cases of obstetrics most physicians have abandoned the order for vaginal douches, as a rule, al-

though a few physicians still adhere to the practice. (See Douches, Chapter XI.)

How soon after labor may the patient turn on her side?

After normal labor the physician sometimes allows the patient to turn upon her side twenty-four hours or so after labor. This depends entirely, however, upon the patient's condition. In some instances she may be required to lie quietly on her back for a few days or even longer.

What should the patient's diet consist of during the first twenty-four hours after labor?

The patient's diet should consist of liquid food, such as milk, gruels, broths, and tea.

Describe the patient's diet on the second day.

It should consist of milk-toast, oyster-stew, or clam-broth, coffee, tea, crackers, etc.

Describe the diet usually ordered on the third day.

On the third day after the patient's bowels have moved her diet should include cereals, such as oatmeal, farina, rice, coffee, tea, milk, chicken-soup with barley, toast, bread-and-butter, baked or stewed apples, etc. In case of an excessive flow of milk in the patient's breasts however, all liquids should be restricted in her diet as much as possible.

What should the diet consist of on the fourth day?

The diet on the fourth day should consist of a soft-boiled or a poached egg, milk, coffee, tea, cocoa, bread-and-butter, chicken-soup, breast of the chicken, or a squab, for the mid-day meal.

Describe the diet on the fifth day.

On the fifth day the diet should include cereals of all kinds, with cream, eggs in any style, coffee, tea, or cocoa, bread-and-butter, toast, crackers, meats, such as lamb-chops, or a small portion of juicy porterhouse steak; jellies, custards, light puddings; stewed fruits, such as apples, prunes, and peaches. The fruits are valuable for their laxative qualities.

Describe the diet for the sixth day.

On the sixth day the patient should receive a general, or full diet, at her three regular meals. At ten o'clock in the morning she should also be given a glass of milk, about two o'clock in the afternoon a cup of chocolate or an eggnog, and at bedtime—about ten o'clock—a glass of hot milk. The hot milk should be repeated at two o'clock, when the infant nurses. The nurse should see that the patient drinks plenty of pure water during the daytime.

What fruits and foods should the patient avoid in her diet?

She should avoid all acid fruits, such as lemons, grapefruit, sour oranges, plums, and strawberries, vinegar, onions, tomatoes, heavy sauces, highly spiced food, dressings and rich pastry.

Why should acids and spiced foods be avoided?

All acid fruits and spiced foods are liable to affect the milk of the mother's breast and give the nursing infant colic.

How soon after labor should the patient's bowels move?

The patient's bowels should move freely on the third

day after labor, and thereafter at least once daily. In case the patient does not have a defecation at the close of the second day following labor the nurse should ask the physician's advice. He usually prescribes a laxative, such as castor-oil, followed by a saline enema in six hours; or cascara, or a saline cathartic, such as effervescent citrate of magnesia.

Describe some of the methods for administering castor-oil so as to disguise its taste.

The taste of the oil may be disguised if given suspended in orange juice, wines, etc. Squeeze about half an ounce of orange-juice into a small wineglass, moisten the sides and edges of the glass, then pour one-half to one ounce of the castor-oil in the center of the orange-juice in the glass, and add one ounce or more of orange-juice. After this mixture is administered the patient should be given a small piece of orange to eat. As a rule, the patient does not taste the oil at all.

Another method prescribed by Dr. De Lee advises the oil suspended in cherry and whiskey—instead of orange juice. Pour a dram of cherry-wine in a small wineglass, moisten the sides and edges with the wine, then pour the required amount of oil in the center of the wine in the glass, and add a dram of whiskey. Castor-oil may also be given suspended in black coffee. Pour half an ounce of cold coffee in a glass, in which suspend the amount of oil ordered. The patient should drink a small glass of hot coffee before and after the dose of oil.

What should be remembered in giving a patient an enema?

The nurse should remember to protect the patient's bed with a rubber sheet and towels. The patient should

not be exposed any more than absolutely necessary. The fountain syringe or irrigator should be suspended about three feet above the patient's rectum, filled with a warm solution as directed by the physician's order. The rectal-tube, or the hard-rubber nozzle, should be thoroughly lubricated with sterile vaseline; the air and cold water in the tubing should then be allowed to escape, after which the nozzle should be slowly inserted in the rectum. The flow of the solution should be regulated so as not to escape too rapidly. In case the patient has lacerations and stitches about the vaginal orifice, the nurse should be exceedingly careful not to injure the perineum while inserting the rectal-tube or nozzle. Precautions should also be taken so that none of the defecation is forcibly expelled so as to enter the vaginal orifice and birth-canal. It is therefore wise to place a pledget of sterile cotton over the vagina and upper part of vulva before giving a rectal injection. In bathing the genitals, after defecation, the nurse should remember to wipe downward from the vulva toward the rectum.

Should the obstetrical patient be allowed to sleep immediately after labor?

Yes, she should be encouraged to sleep as long as possible—as soon as her room is set in order, ventilated and darkened.

How much sleep should the patient have during the twenty-four hours?

The patient should sleep at least six hours during the night, if possible. In case she remains persistently sleepless the physician should be consulted. The nurse should arrange her duties so that the patient may sleep a couple of hours in the afternoon.

Describe the general treatment of the patient.

The nurse should take and record the patient's pulse, respiration, and temperature three times a day. Unless the weather is agreeable, the usual daily soap and warm water bath should be omitted, and not given oftener than twice a week. It will prove refreshing to the patient to give her a daily alcohol sponging, using absorbent cotton saturated with warm alcohol, which must be heated in the bottle placed in an agate-ware pitcher filled with hot water. The patient's hands and face should be washed, her hair brushed and combed daily, and her teeth brushed before and after each meal. The patient's gown and bed linen should be changed daily, if possible, and the room kept light, properly ventilated with fresh air, although the mother and her infant must not be exposed to drafts at any time.

What should be remembered when preparing and giving the patient a sponge-bath?

The nurse should bathe the patient before her meals, if possible, or not earlier than two hours after a regular meal. The room should be sufficiently warm, and during the bath the windows and doors should be closed. Everything required for the bath, including pitcher of warm water, 85° to 98° F., large basin, soap, towels, blankets, clean gown, and bed linen should be at hand before beginning the bath. A large Turkish bath towel or a woolen blanket should be placed under the patient, and her gown removed, and she should be covered with a warm, woolen blanket. The body should be washed in sections, beginning with the face, ears, neck, arms downward. Each part should be thoroughly dried and covered before proceeding. Special attention should be given to the axillas, and between the toes. The nurse

should observe any abnormalities of the patient's skin during the bath, which should be noted on the record sheet.

How should the patient's hair be combed?

The nurse first places a towel under the patient's head, after which she should part the hair in the center over the head, and gently brush and comb out the tangles, if any. Alcohol, 95%, is excellent in loosening large masses of tangled hair. It is best to begin combing at the ends of the hair, especially if tangled. The hair should not be jerked, pulled or broken off, but held firmly between the hand and head. As soon as all snarls have been removed the hair should be braided in two braids, one back of each ear, rather high.

Are visitors allowed in the lying-in room?

No. Only the nearest relatives should be allowed to visit the patient's room, and their calls should be limited to about five or ten minutes. Friendly calls of neighbors and distant relatives are fatiguing to the patient.

Are flowers to be allowed in the lying-in room?

A few flowers of delicate colors and fragrant odors may be allowed to stand on the dresser, or on the table near the patient's bed, so that she can see them. All flowers must be removed from the room for the night, and all large, flaring colored and heavy perfumed bouquets should be excluded from the room even during the daytime, after the patient has been given a look at them.

When does the patient usually get out of bed for the first time after labor?

In normal cases the physician generally permits the

patient to get up out of bed between the tenth and twelfth days after labor. Yet this all depends entirely upon the patient's condition and the physician's custom and practice. The first day on which the patient gets out of bed she is placed in a comfortable rocker, or a morris-chair, where she is allowed to remain for a limited time, between half an hour to an hour, or more as she desires. On the second day the patient is allowed to stand on her feet, and take a step or two from the bed to her rocker. On the third day she is permitted to walk slowly around the room. It is better for the patient's future health to remain in bed a couple of days or a week longer, rather than to get out of bed too soon, since her social and household duties, combined with the care of nursing the infant, are sure to tax her strength. The time set for a patient's leaving her bed is left entirely to the attending physician, and in no case to the nurse in charge.

CHAPTER X

CARE OF THE NORMAL INFANT

Describe the first care of the new-born.

After the nurse is certain that the mother is in good condition she should then arrange everything needed for anointing and dressing the infant. The eyes are usually attended to by the physician, who first washes them out with sterile water. Most physicians usually adopt Crede's method, as follows:—First the infant's eyelids are separated, then the physician drops one or two drops of silver nitrate solution in each eye. This is neutralized by a weak saline solution. Argorol, fifteen per cent., or protargol, ten per cent., are often used by physicians as preventives of ophthalmia neonatorum.

What is vernix caseosa?

Vernix caseosa consists of the white, thick, cheesy substance which covers the fetus at birth. It is composed of epithelial scales and secretions of the sebaceous glands.

How is the vernix caseosa removed from the infant's skin?

It is removed by anointing the infant's body with warm olive oil, albolene, white vaseline, or benzoinated lard.

Describe the method of anointing the infant.

The nurse should place the infant on a pillow which should be placed on a table or a couch, in case the nurse

does not hold it on her lap. The oil should be applied freely to the child's body with a cotton sponge and care should be taken that none of the oil comes in contact with the eyes. Special attention should be given to the folds of the neck, behind the ears, axillas, groins, and to the fingers and the toes. The new-born should be wiped off quickly with a warm, soft bath towel, and not exposed any more than absolutely necessary.

Describe the care of the umbilical cord immediately after birth.

The nurse should sterilize her hands and inspect the cord to observe that it is not bleeding. She should follow the physician's orders according to his custom adopted in the dressing of the cord. He may order the stump of the umbilical cord and the surrounding skin washed off with lysol solution, one per cent., or direct that it be painted with iodine, after which it should be wrapped in sterile gauze. The cord should be placed on the left side of the abdomen, or in a position in which it naturally lies. The flannel binder is applied firmly, but not too snugly, and it is pinned with the smallest sized safety-pins, in order to keep the umbilical dressing from slipping, for the first few days. The infant's temperature should now be taken, after which it should then be dressed as quickly as possible and placed in a warm basket.

What is considered the normal temperature, pulse, and respiration of the new-born?

The infant's temperature varies from 98° to 99° F., and the normal pulse ranges from 120 to 150 beats per minute, and the respirations vary from 30 to 60 per minute.

Describe the color of the infant's skin at birth.

The infant's skin at birth is of a bluish-pink color, which becomes pink or red in a few hours, and in a few days becomes clear and assumes its natural or normal color.

What should the temperature of the room be kept at for the new-born?

The temperature of the room during the first week should be kept at 72° F., and after that between 68° to 70° F.

How are the infant's ailments detected?

The ailments are indicated from the character of its cry. The child cries from pain, hunger, discomfort, illness, temper, and habit.

Is crying beneficial for the new-born?

Yes.

Why is crying beneficial for the new-born?

Crying of the infant expands its lungs and develops the muscles of the chest.

How much crying is necessary for an infant?

The infant should cry strong and vigorously for at least one-half hour each day.

Describe the cry of pain.

The infant's cry of pain is usually sharp and strong, but not always continuous, at the same time it draws up its legs and twists its body. In case the infant falls asleep it often awakes with a scream, which may be caused by colic or ear-ache.

Describe the cry of hunger.

The cry is usually continuous and fretful; at the same time the infant sucks its fingers, and as soon as fed ceases its crying.

Describe the cry of indigestion.

The cry of indigestion is similar to that of hunger except that the infant does not cease to cry after being fed.

Describe the cry of weakness and of marasmus.

The cry of weakness and of marasmus is feeble and whining.

Describe the cry of pneumonia.

The cry of pneumonia is short, catching, and suppressed.

Describe the cry of hydrocephalus and of meningitis.

The infant's cry usually begins with a scream and has a peculiar sharp, ringing sound due to acute pain. This cry is also characteristic in bone diseases.

Describe the cry of temper.

The infant's cry of temper is violent, accompanied with a stiffening of the body and a throwing about of the arms and legs.

Describe the infant's sleep.

The infant, during the first week after birth, should sleep practically all the time except when disturbed for nursing, changing, and bathing. After the first week or so the child will have occasional muscular twitchings and move while sleeping, especially following any unusual noise or turning on bright lights in its sleeping room.

Should the infant be allowed to sleep at the mother's breast?

No, the infant should not be allowed to sleep at the breast after nursing, under any circumstances, since this macerates the nipples, and favors the formation of cracks. It is also unsafe, as the mother might turn on her side in her own sleep, and by so doing might unconsciously smother her child.

Should the infant be allowed to sleep continuously in one position?

No, the infant should be changed frequently from side to side during its sleep.

What is the average weight of an infant at birth?

The average weight of the new-born ranges between six and one-half to seven and one-half pounds.

Does the new-born gain in weight immediately after birth?

No, the infant loses in weight during the first four or five days. At the end of the first week it should begin to gain, and increase in weight steadily.

How often should the infant be weighed?

The infant should be weighed every day; some physicians wish the infant weighed twice a week, and others only once a week.

What should the average gain in weight per week be during the infant's first five months?

The increase in the infant's weight after the first week should be about four to eight ounces per week, for about five months. After that the average gain in weight should be two to four ounces per week.

Is weighing the infant regularly of importance?

Yes, since weighing reports accurately how the infant is thriving, and it is therefore of much value and great service in guiding the child's physical condition. In case it loses in weight continuously there is something wrong.

How soon should the new-born be given a tub-bath?

The new-born should be given a tub-bath daily as soon as the umbilicus has healed.

When should the daily tub-bath be omitted?

The tub-bath should be omitted in case of eczema and other skin diseases and in case the infant is delicate and feeble. During an acute illness the tub-bath should not be given without the physician's orders.

Why should the daily tub-bath not be given?

Feeble and delicate infants should not be exposed and fatigued by a daily tub-bath, but should be gently sponged instead. In cases of eczema, or any other skin disease, the tub-bath should not be given, since soap and water irritate the delicate and inflamed skin.

Describe the sponge-bath.

The infant's sponge-bath should be given in a warm room free from drafts. The nurse should have everything required conveniently at hand before beginning the bath. The infant's head and face should be washed and dried thoroughly before sponging the body, and special attention should be given to the ears, neck, axillas, groins, palms, and feet, especially between the fingers and toes. The infant's body also must be thoroughly dried by patting it with a warm, soft bath-towel, after which powder should be very lightly applied. Many

physicians, however, prefer the infant anointed with oil instead of giving it a daily sponge-bath.

What temperature should the water be for the child's bath between the ages of one week and two years?

At birth the bath should have a temperature of	100° F.
During the first few weeks after birth	98° F.
After the sixth month	95° F.
After the first year	90° F.
During the second year	75°-85° F.

How should the tub-bath be given to the infant?

The tub-bath should be given one to two hours after last feeding. The room should be warm, free from drafts, and the nurse should first place everything needed for the bath conveniently at hand. The bath-tub should be covered with towels, and the water should be of the required temperature before immersing the infant, which should be supported by the head and shoulders, so that the body is held firmly and does not slip from the hands of the nurse. The child should be slowly immersed in the water so as to avoid shock. Separate sponges or wash-cloths should be used for the face and the body. The bath should be given as quickly as possible. Wash the head and face first and the body last. Special attention should be given to the creases of the body, after which the child should be dried thoroughly by patting the body in a soft towel, and the body should be powdered lightly.

Describe the daily care of the umbilical cord.

The umbilical cord should be kept dry and the parts disturbed as little as possible until the cord drops off.

While anointing the infant, or giving it its daily sponge-bath, it is not necessary to remove the umbilical dressing unless it is out of place, or soiled with urine, etc. In such cases the gauze should be carefully soaked off with lysol solution, one per cent.; the umbilicus should then be cleansed with lysol solution, and dressed with sterile gauze. In case the cord becomes moist, it should be thoroughly cleansed with alcohol, 95%, and a sterile dressing should be applied, and the binder adjusted smoothly and firmly. The umbilical cord should be treated the same as any other surgical wound. The nurse should daily observe the umbilical cord, and note whether it is moist, dry, or has any offensive purulent discharge. The physician sometimes orders the umbilical stump powdered with aristol or alum.

Describe the separation of the umbilical cord.

The umbilical cord usually separates and drops off between the fifth and eighth days after birth. At the time the nurse discovers the dressing slightly stained with blood. After the infant's bath, wash the umbilicus thoroughly with alcohol, 95%, or some other antiseptic solution. Apply a sterile dressing, and place a small cotton pad over the navel, after which pin the binder firmly, so as to prevent an umbilical hernia. The separation of the cord and the condition of the umbilicus should be noted by the nurse on the record-sheet.

Describe the infant's clothing.

The clothing of the new-born should be of a light texture, warm, non-irritating, and supported from the shoulder. The outfit consists of an abdominal binder, shirt, diaper, socks, flannel petticoat, and a muslin slip. At bedtime the petticoat and slip should be removed and replaced with a flannel night-gown.

Describe the daily care of the eyes of the new-born.

The infant's eyes should be washed with sterile water at least twice a day, or oftener in case of any discharge. Any irritation of the eyelids, or any discharge from the eyes, should be reported to the physician at once.

What should be used in washing the infant's eyes?

The wipes for the eyes should consist of sterile cotton sponges or of soft pieces of linen.

How often should the infant's mouth be washed?

The infant's mouth should be washed twice a day with sterile water, or in case the mouth is not clean, it should be cleansed more frequently.

Describe the cleansing of the infant's mouth.

The nurse, after first sterilizing her hands, should take a small piece of absorbent cotton saturated with sterile water; wrap it about the index, or the little finger firmly, and gently cleanse the mouth. An applicator consisting of a piece of absorbent cotton wrapped about a tooth-pick, dipped in sterile water may also be used to swab out the mouth. In cleansing the mouth care must be taken so as not to scratch the delicate mucous membrane.

Describe the method followed in cleansing the infant's nostrils.

The infant's nostrils should be cared for as follows: After preparing applicators, made by wrapping absorbent cotton about tooth-picks, the nurse should lubricate an applicator with white, sterile vaseline, or albolene, and gently insert in each nostril, which speedily softens any hardened mucus lodged therein. Care should be exercised so as not to scratch the mucous lining of the nostrils, since the infant struggles against this part of its toilet.

Describe the daily care of the genital organs of the female infant.

The nurse should carefully remove the white substance which sometimes accumulates in the folds of the labias of the female infant, with cotton sponges saturated with sterile water. Albolene, or olive oil is also useful in cleansing the parts. In case of any discharge the nurse should note it on her record-sheet.

Describe the daily care of the genital organs of the male infant.

The foreskin of the male infant's genitals should be pushed back, and the parts washed gently with absorbent cotton sponge saturated with sterile water, after which albolene, or olive oil, should be applied to the parts. In case the foreskin appears tight, the nurse should call the physician's attention to the fact.

How soon should the infant void urine after birth?

The infant usually passes urine a few hours after birth.

What should the nurse do in case the infant does not void urine?

The nurse should carefully examine the meatus, in order to observe whether there are any abnormalities of the urinary organs, and if any, report them to the physician at once.

How long a time can the infant go without voiding urine, without injury to the urinary organs?

The infant may pass thirty-six hours without voiding urine, without injuring the parts.

What can be done to induce the infant to void urine?

The infant should be given plenty of sterile water to

drink. It is sometimes helpful to hold the infant over a basin of warm water, or apply warm compresses over the abdomen and on the back over the kidneys. If these methods fail to induce urination the physician usually orders a diuretic, such as sweet spirits of niter.

Describe the method of obtaining a specimen of urine from the male infant.

The infant's penis should be placed in the neck of a small bottle which should be fastened between the thighs until it has voided urine.

Describe the method of obtaining a specimen of urine from a female infant.

The infant should be placed on a pillow, with a small kidney-shaped basin adjusted under the buttocks, until urine is voided in the basin. The edges of the basin should be protected with cotton pads.

What is the average quantity of urine voided by a healthy infant during the first twenty-four hours after birth?

The average quantity of urine voided is about two ounces.

What is the average quantity of urine voided by a healthy infant on the second day after birth?

The average quantity of urine voided the second day after birth is about one-third of an ounce to three ounces.

What is the average quantity of urine voided by a healthy infant daily between the third and sixth days after birth?

The daily average ranges from three to eight ounces of urine.

What is the daily average of urine voided by a healthy infant between the seventh day and end of second month after birth?

The daily average of urine voided is five to thirteen ounces.

What is the daily average of urine voided by a healthy child between the second and sixth months?

The average amount of urine voided daily is seven to sixteen ounces.

What is the average amount of urine voided by a healthy child daily, from the sixth month to the second year.

The daily average amount of urine voided is eight to twenty ounces.

Describe the small and large intestines of the infant.

The infant's small intestine at birth is about nine feet in length, and the large intestine is about eighteen inches in length. The lower half of the large intestine consists of the sigmoid flexure.

What is the first intestinal discharge of the infant called?

The first discharge of the infant's bowels is known as meconium.

Describe the meconium.

Meconium consists of a dark green, almost black, tenacious substance discharged from the infant's bowels after birth.

How soon after birth should the infant's stools assume a normal color?

The infant's stools should assume a normal color about

the fifth day after birth, as soon as the meconium has all been evacuated.

Describe the character of the infant's stools after the fifth day.

The stools after the fifth day should appear of a yellow, soft, smooth, normal consistency.

How many movements of the bowels should the infant have daily?

The number of stools varies between three and six daily until the end of the second week. After the first month the average number of stools should be about two daily.

What observations should be made of the infant's stools?

The nurse should observe the character and note the number of movements daily on the record-sheet.

Why is it important to observe the character of the infant's stools?

It is important since the general condition of the infant may be observed from the character and frequency of the stools. Any abnormal condition of the infant is first indicated by intestinal disturbances, as symptoms of other diseases.

What cathartics are usually given when the infant's bowels do not move freely?

Castor-oil is usually given to infants to regulate the bowels. A medicine-dropper should be used to administer the oil, which should be dropped back in the mouth, so it does not escape. Injections or suppositories are often ordered instead of cathartics.

What syringe should be used in giving an enema to an infant?

A small bulb-syringe, which holds about two ounces, is best adapted for flushing an infant's colon. A small, soft, rubber catheter attached to a glass funnel, or a fountain-syringe may be used also, instead of a bulb-syringe.

How should an enema or an injection be administered to an infant?

The room should be warm, and sterile water used for the injection. The infant should not be exposed any more than possible, and the nurse should first arrange sterilized supplies needed conveniently on a chair or table. The infant should be placed on its left side, on a pillow properly protected with a rubber and towels, either on the nurse's lap or on a couch, or bed. Extra napkins and a small rubber sheet should be adjusted beneath the infant's buttocks before giving the injection, which usually consists of castile soap and warm water, or of a normal salt solution. Before inserting the nozzle, or soft rubber catheter, it should be thoroughly lubricated with olive oil, and the air and cold water expelled. The catheter should not be inserted very high into the sigmoid flexure, and only about two ounces of the solution should be given at a time, which should be allowed to return. This may be repeated until the bowels are cleansed. All stools having an unusual character should be saved for the physician's inspection.

What can be done to prevent irritation of the infant's buttocks?

The napkins should be changed frequently, and the infant's buttocks washed gently with cotton sponges, or

soft linen and warm water, after which they should be patted and carefully dried. A soiled napkin should not be dried and used a second time on an infant without first washing it.

Why should diapers not be used twice without being washed?

In case the urine is allowed to dry on the diaper the salts concentrate and irritate the tender skin of the infant's buttocks, if used a second time before washing the diaper thoroughly.

How should the irritated buttocks of the infant be treated?

The nurse should cleanse the buttocks with cotton sponges saturated with pure olive oil, after which she should apply stearate of zinc, or oxide of zinc ointment. An ointment containing equal parts of bismuth subnitrate, and castor-oil also proves satisfactory and soothing when applied to the irritated skin. In all cases of skin erosion of the infant's buttocks the nurse should consult the physician.

How should the infant's diapers be washed?

The diapers should not be washed with strong soaps or washing powders. Ivory soap is considered the purest and best adapted for cleansing soiled napkins. The nurse usually places the napkins in a covered pail, or receptacle of cool water, until it is convenient for the laundress to wash them. They should be boiled thoroughly for fifteen minutes, rinsed well and dried. If possible the diapers should be washed daily.

How often should the infant be put to the mother's breast?

The infant should be put to the breast for fifteen

minutes about eight hours after birth, and every four hours thereafter, during the first two days. After the second day the infant should nurse every three hours during the day, and once during the night. The regular hours for nursing should begin at 7 A.M., and the last nursing should be given about 10 P.M., and another nursing should be given about 2 A.M. The nipples should be sponged off with sterile cotton sponges saturated in sterile water. In case they become tender or cracked, the nipples should be anointed with sterile albolene or cocoa-butter.

Can the nurse always adhere strictly to regular rules for nursing the infant?

No, since in all practical experience the nurse finds it very difficult to follow set or prescribed rules for infant feeding. There are only a few infants which can be sufficiently awakened at regular intervals to nurse. It is also impossible to regulate the time allotted for nursing. Some may obtain sufficient nourishment while nursing five minutes, and others require fifteen or even twenty minutes to satisfy their hunger. The nurse must not fail to encourage a regular system for the infant's nursing, when the infant can be trained to nurse regularly, ten to fifteen minutes every three hours during the daytime.

Does the colostrum always satisfy the hunger of the infant?

No, the colostrum does not supply nourishment, but acts as a cathartic, which aids in regulating the bowels until the meconium is expelled. The infant requires nursings of hot water for the first few days, which should be given every two or three hours. This usually suffices for the infant until the milk enters the mother's breasts.

In case the infant refuses to take the mother's nipple what should be done?

Various methods are adopted in order to encourage the infant to take the nipple. The nurse usually squeezes a little milk from the nipple into the infant's mouth, or causes the milk to flow easily, by an application of a hot, wet compress to the mother's breast before the nursing. A breast pump may also be used for the same purpose, a few minutes before the nursing time. A nipple shield may prove of great value in some cases.

Describe the daily amount of milk taken by a healthy infant during the first three weeks after birth.

AHLFELD'S TABLE*

	Number of Nursings	Average Amount Drunk at Each Nursing	Total Grams	Total Ounces
1st day	2	2.5 grams	5.0 grams	1 $\frac{1}{4}$ drams
2nd "	5	29.0 "	149.0 "	4 $\frac{1}{2}$ ounces
3rd "	6	41.0 "	246.0 "	8 $\frac{1}{4}$ "
4th "	7	58.8 "	401.6 "	13 $\frac{1}{2}$ "
5th "	6	67.5 "	405.0 "	13 $\frac{1}{2}$ "
6th "	7	73.0 "	511.0 "	17 "
7th "	6	92.2 "	553.2 "	18 $\frac{1}{2}$ "
8th "	7	97.0 "	589.0 "	23 "
9th "	6	93.0 "	558.0 "	18 $\frac{3}{8}$ "
10th "	7	86.0 "	602.0 "	20 "
11th "	6	96.0 "	576.0 "	19 $\frac{1}{8}$ "
12th "	6	93.0 "	558.0 "	18 $\frac{3}{8}$ "
13th "	7	86.0 "	602.0 "	20 "
14th "	7	91.0 "	637.0 "	21 $\frac{1}{4}$ "
15th "	6	93.0 "	558.0 "	18 $\frac{3}{8}$ "
16th "	7	90.0 "	630.0 "	21 "
17th "	7	92.0 "	644.0 "	21 $\frac{1}{2}$ "
18th "	6	96.0 "	576.0 "	19 $\frac{1}{2}$ "
19th "	7	105.0 "	735.0 "	24 $\frac{1}{2}$ "
20th "	6	112.0 "	672.0 "	22 $\frac{1}{2}$ "
21st "	7	102.0 "	714.0 "	23 $\frac{3}{8}$ "

* Dr. Joseph B. De Lee's *Obstetrics for Nurses*, p. 162, 1912.

A Few Useful Hints

The new-born infant should be kept warm, since warmth prevents colic. In case the infant's feet are cold, hot water bottles, or a hot water-bag should be used. The rubber bag should be examined frequently to observe that it does not leak. The water should not be too hot, as the bag might burn the infant. It should never come in contact with the skin.

The infant should not remain wet, and the diapers therefore should be changed as soon as wet.

The infant should not be allowed to look directly at a bright light or at the sun.

In case rubber nipples are used they should be kept in a solution of boracic acid when not in use.

The infant should not be rocked or tossed about while nursing, or immediately after, since this motion might cause regurgitation.

In case of regurgitation the infant should be held in an upright, or sitting position.

After sterilization of the nursing bottles they should be corked at once with sterile cotton.

The infant should be given a small amount of sterile water to drink between feedings.

The infant should not be allowed to sleep under an open window.

The infant should not be allowed to form bad habits; such as sleeping in the mother's bed; lifted, or rocked whenever it cries, etc. The infant should not be permitted to nurse its thumb, fingers, or a rubber pacifier. Above all other habits, it must *not* be given the tipping-habit for peppermint, or brandy water, etc.

All abnormalities of the infant's urine, stools, etc., should be reported to the physician.

CHAPTER XI.

OBSTETRIC OPERATIONS

Define obstetric operative delivery.

Operative delivery is performed by artificial aid rendered by the physician, either with instruments or by manipulation.

Mention some of the operations in which the infant is delivered.

The infant is delivered by version, forceps, surgical operations on the mother, and by mutilation of the fetus.

What is meant by version?

Version consists of turning the fetus in the uterus so as to change the existing presentation to that of a more favorable position.

How is version divided?

1. Cephalic version, which consists of turning the fetus so that the head is made to present. 2. Podalic version, which consists of turning the fetus so that the feet are made to present.

Describe the methods in which version is performed.

Version may be performed by three methods:—1. External version, which consists of external manipulation through the abdominal wall. 2. Combined, or bipolar version, which consists of a combination of both external and internal methods, in which the physician places one hand on the abdomen of the patient, and in-

introduces the other hand into the vagina, inserting his finger-tips into the uterus. In these two forms of version the head of the infant is usually brought down into the pelvis. As soon as this is accomplished the physician usually ruptures the membranes and allows labor to proceed. 3. Internal version consists of internal manipulation in which the physician introduces his whole hand into the uterus. He then grasps the infant's foot and brings it down into the vagina, after which the infant is delivered by breech.

What accidents may occur in version?

Accidents, such as a rupture of the uterus and an untimely detachment of the placenta, etc., may occur.

Describe delivery by breech.

In some cases where breech is presented in spite of the powerful labor pains, the breech will not come down into the pelvis without assistance. The physician therefore introduces one hand into the uterus, grasps one foot of the infant, and with gentle external pressure of his other hand brings first one leg, and then the other, down through the vulva.

At the same time the physician is delivering the infant's body the nurse may be requested to apply pressure on the fundus. She should place her hands on the abdominal wall over the fundus and press firmly downward, while the thorax and the shoulders of the infant are being expelled. After expulsion of the body, in case the arms are not expelled, the physician passes his hand into the vagina until his two fingers reach the shoulder, and thence down the arm to the elbow, after which the forearm and the hand are swept over the infant's face and brought down over the chest.

During the delivery of the infant's head the physician inserts two fingers into the child's mouth, while with the fingers of his other hand he grasps the nape of the infant's neck. At the same time the nurse may be called upon to apply a firm, downward pressure on the patient's abdominal wall just above the symphysis pubis.

Forceps are sometimes used in breech delivery, although more or less laceration of the perineum is caused thereby.

Describe the dangers which may result from breech delivery.

During breech delivery the greatest danger arises from compression of the umbilical cord between the infant's head and the pelvic wall. In case the pulsation of the cord ceases the infant will die in a few minutes if not delivered at once. Extension of the arms above the infant's head is also a serious complication in delivery.

What are considered the most common obstetric operations?

The most common operations are those of forceps.

How are the forceps operations divided?

They are divided into three classes: High, medium, and low forceps operations.

What are the indications for the use of forceps?

The use of forceps are indicated whenever the life of the mother or her infant call for immediate delivery; where the infant is unusually large, and where there is a slight pelvic deformity; and in all cases where the mother proves incapable of delivering the infant, especially in eclampsia, or whenever the nervous system proves unequal to bear the great strain of labor.

Describe the mechanism of the forceps.

The forceps are merely metal substitutes for the physician's hands. They consist of two blades which are applied separately to the sides of the infant's head.

Mention the forceps most commonly used to-day by physicians.

Simpson's, Elliott's, and Axis traction forceps are commonly adopted for high forceps operations.

Describe the general preparations for forceps operation.

The room selected for the operation should have plenty of clear light, although not a room in which the sun shines directly upon the operating table during the operation. The room should be located near the bathroom, and its temperature should be adjusted between 76° to 80° F. All the surgical supplies and dressings which come in contact with the patient should be sterile, and the nurse should have an ample supply of hot and cold sterile water, sheets, towels, sponges, pads, basins, pitchers, scrub-brushes, solutions, etc., arranged on a table convenient for the surgeons. A tested hypodermic syringe also should be in readiness with alcohol, 95%, and sterile cotton, etc.

Describe the improvised operating-table.

The improvised operating-table should be high, long and narrow.

What style of table is usually chosen for the operating-table?

The kitchen or the library table makes a good operating-table, or in case these are not available two small tables, fastened together by tying the legs firmly so as

to form one large table, may be improvised for an operating-table.

How is the pad made for covering the operating-table?

A pad should be made by folding a blanket or a clean quilt the right size to cover the table. The pad should be covered first with newspapers, or enamel cloth, over which pin a sheet securely.

How can the nurse improvise a Kelly pad?

The Kelly pad can be improvised by tightly rolling a newspaper or a blanket in the shape of a half-moon, which should be pinned with safety-pins. The pad should be protected with enamel cloth, and covered with a sterile sheet pinned securely.

How can the side table for supplies be improvised?

In case tables are scarce an improvised side table can be arranged by taking a leaf of the extension table, or even the ironing-board, which should be covered with enamel cloth and a sterile sheet and supported on two wood-bottomed chairs. This makes a good substitute for a table for solutions or instruments.

How can the window-panes be rendered opaque?

The window-panes can be made opaque by rubbing them with a bar of sapolio, or bon ami moistened with water. A thick lather of soap rubbed on the panes and allowed to dry, also renders the window-panes opaque.

Describe the general preparations and arrangements of the operating-room.

The improvised operating-room in the private home should resemble the operating-room in the hospital as far as possible. All rugs, carpets, etc., if any, should be

removed from the floor. In case the carpet cannot be removed it should be protected with newspapers or oil-cloth, over which a sheet should be tacked or pinned down securely. In case the operation takes place during the day the operating-table should be placed about five or six feet from the window, facing the best light. In case the operation occurs during the night the table should be placed in the center of the room near the best electric or gas lights. On the table should be placed the improvised pad, a small pillow, sheet, and a light weight, woolen blanket. The small side tables should also be arranged so as to leave plenty of space to pass between them and the operating-table. In case the small tables are highly polished they should be carefully protected and covered with enamel cloth, and then with sterile towels.

The small table on the right side of the operating-table should contain sterile sheets, towels, sponges, gauze, tray with instruments, and a small tray with the sutures. The small table on the left side of the operating-table should contain pitchers, and the basins containing solutions, sponges, a small tray containing scissors, artery-clamps, and the tape or ligatures for tying the infant's umbilical cord.

The preparations for the physician who administers the anesthetic to the patient should consist of a small table or stand placed near the patient's head. On the table should be placed sterile vaseline, towels, sponges, a tested hypodermic syringe, alcohol, 95%, and a large kidney-shaped basin. Near each end of the operating-table should be placed a chair in case the surgeon, or the physician administering the anesthetic, wishes to sit down. A large slop-jar or enamel pail should also be placed under the operating-table near the surgeon for

receiving soiled sponges, towels, etc. A sterile douche-bag also should be hung conveniently at hand near the operator, with an ample supply of hot and cold sterile water in case of emergency.

The nurse should also have large pans and a piece of ice at hand in the room for speedy use in case of asphyxiation of the infant at birth. She should also have a warm, woolen blanket for receiving the infant as soon as delivered, and see that the basket has been prepared with hot water-bags for the child some time before birth.

In making final preparation of the improvised operating-room the nurse should carefully inspect the supplies and make a memorandum in order to see that nothing absolutely necessary is missing. It is always advisable to have an ample supply of hot and cold sterile water in case of emergency. The bath-room should be supplied with plenty of clean towels, green soap, sterile nail-brush, orange-sticks, and solutions prepared according to the surgeon's practice.

Describe the sterilization of the instruments.

All instruments should be boiled for about fifteen minutes in a one per cent. solution of washing-soda, soda bicarbonate, or borax in a covered enamel vessel, or pail.

Why should soda or borax be added to the water in sterilizing the instruments?

The soda prevents the instruments from becoming tarnished, rusted, or blunted, etc.

What can be used as an improvised sterilizer for the instruments?

In case the surgeon does not bring his sterilizer, the

nurse should have in readiness a new tin wash-boiler with a cover; or any oblong covered enamel-ware pan or pail, which has been thoroughly scrubbed and boiled, can be used as a sterilizer. As a rule the surgeon carries his sterilizer in his satchel for boiling his instruments.

Is it necessary for the nurse to become familiar with the names and the appearance of the instruments?

Yes, it is advisable for the nurse to familiarize herself with the names and appearance of instruments, since she may be called upon to assist the surgeon during an operation, and will therefore be required to pass him the instruments called for, etc.

Describe the general preparations of the patient for operation.

The preparations of the patient are the same as required for normal labor. The patient should be partly prepared, and needs only an antiseptic washing after being placed on the table. In case of emergency, preparations are made on the operating-table as follows: After the patient is placed in a lithotomy position, the hair about the vulva should be shaved or clipped with the scissors. The parts should then be thoroughly washed with green soap and water, and cleansed with a solution of bichloride, 1 to 2000, or a solution of lysol, one per cent., according to the surgeon's practice. The nurse should also ask the surgeon whether he wishes the patient catheterized by her or not.

After the patient has been prepared the sterile leg-gings or stockings should be adjusted, and the body covered with a sterile sheet and a woolen blanket. The buttocks of the patient should be brought a couple of inches down over the edge of the table, and a sterile

towel should be adjusted over the Kelly pad. The patient's legs should be supported by assistants on either side of the table. Each assistant should place one hand on the instep of the foot and grasp the knee with the other hand. A leg-holder, or a sheet, may also be improvised as a leg-holder to support the limbs.

How can the improvised leg-holder be made and adjusted?

A substitute for the leg-holder can be made by taking a strong large sheet on the bias and twisting it a few times. In adjusting the sheet, first place the middle portion of the sheet around the patient's shoulders and then tie the ends around each leg just below the knees. The knot should be fastened on the outside.

The sterile supplies required for forceps operation are the same as those required for normal labor, including sheets, towels, gowns, leggings, or stockings, pads, basins, pitchers, pails, etc.

What instruments are required for forceps operation?

The list of instruments required, according to Dr. De Lee, are as follows:

Obstetric forceps, ordinary, or axistraction, as ordered.

Two long artery forceps.

Four short artery forceps.

Two vulsellum forceps.

One tissue forceps.

Two scissors (one long).

Two large perineal retractors, or specula.

One long uterine packing forceps.

One uterine douche, pint.

Suture material, silkworm, gut or catgut, as ordered.

One catheter (soft rubber).

Two tracheal catheters for aspirating mucus from the trachea; these must not be boiled.*

Describe the nurse's duties during a forceps operation.

The nurse's duties consist in waiting upon the surgeons. She will be required to pass supplies as needed, renew the solutions, pass sterile towels, sponges, dressings, etc. She should always use sterile dressing-forceps in passing the supplies, which should be immersed in a solution of lysol when not in use. In case there is a lack of assistants to aid the operating surgeon, the nurse may be requested to administer the anesthesia to the patient. (See Chapter VIII.) As soon as the infant is born, the nurse should wash its eyes with sterile water, as directed in the delivery of the infant in normal labor, after which she may be required to hold the fundus.

In certain cases, during high forceps, or in breech delivery, where there is difficulty in the infant's head passing through the pelvis, the patient is sometimes placed on the operating-table in the Walcher position.

Describe the Walcher position.

The edge of the operating-table should be protected with a soft pillow, or a blanket. The patient is then placed in the lithotomy position, with the buttocks located at the end of the table. The legs are then allowed to fall slowly down toward the floor, and hang freely over the edge of the table. The hips and legs should be supported so that the patient does not slip off the table.

Describe the care of the patient after forceps operation.

After delivery of the infant, the physician usually

* Dr. Joseph B. De Lee's *Obstetrics for Nurses*, pp. 190-193. 1912.

cleanses the blood off the patient's vulva. The nurse later washes off the buttocks and limbs, using a large sponge of cotton, or a soft towel, or sterile gauze saturated with a warm antiseptic solution. Care should be taken so as not to come in contact with the perineum, or disturb any packing inserted in the vagina. The abdominal binder with the T-binder should now be adjusted, after which the patient should be placed in her bed, which should be prepared with hot water-bags before delivery. Care should be taken in conveying the patient from the operating-table to her bed. The head should not be raised, and the body should not be jolted in any way.

While the nurse rearranges the room the physician usually watches the patient. After the placenta has been examined by the physician it should be wrapped in a newspaper, together with soiled pads, sponges, etc., and burned in the furnace. All soiled sheets, towels, gowns, etc., should be thoroughly rinsed in cold water so that the blood stains are removed before sending them to the laundry.

The surgical instruments should be thoroughly washed in cold water, scrubbed with a brush, and then scalded with a hot lysol solution, and carefully dried. After a septic operation the instruments should be boiled before putting them away.

The care of the patient following a forceps operation is the same as that following a normal labor unless the operation has been very difficult, complicated by lacerations of the soft parts, etc. The patient's room should be aired and darkened, while she should try to sleep. The uterus also should be carefully watched for relaxation, and the amount of lochial discharge should be noted in case of hemorrhage.

Describe the care of the infant after operative delivery.

The infant requires special care as it is liable to choke frequently with mucus, or it may become cyanosed—the latter condition is due to the imperfect expansion of the lungs of the new-born at birth. The nurse should also examine the umbilical cord in order to ascertain whether it is securely tied and that it is not bleeding.

The new-born should be placed on its right side, with its head lower than its body. In order to remove the mucus from the throat the nurse should wrap a soft piece of sterile gauze around her finger, saturate it with sterile water, and then wash out both the mouth and throat gently. A little warm water should also be given to the infant. In case it has been injured by the forceps, the wounds should be cleansed with a solution of bichloride, 1 to 2000, and dressed with sterile gauze. The nurse should call the physician's attention to any unusual or abnormal condition of the infant. In case the infant turns blue, or cyanosed, the physician should be called at once. It is also important to keep the child warm, which may be done by surrounding it with hot water-bags.

*Surgical Operations.***What surgical operations are performed in delivering the fetus?**

Cesarean section, vaginal Cesarean section, symphysiotomy, and pubiotomy.

Define Cesarean section.

Cesarean section consists of an operation in which the fetus and placenta are removed through an incision made in the patient's abdominal and the uterine walls.

When is this operation usually performed?

Whenever it proves utterly impossible to deliver the infant through the natural or the maternal passage.

What are the symptoms indicative for delivery by Cesarean section?

The indications consist of a contracted or a deformed pelvis of the patient, or any obstructions, such as fibroid or other tumorous growths, overgrowth of the fetus, etc. In some cases the infant may be removed by mutilation. In such instances the operation of Cesarean section is usually resorted to in order to preserve the infant's life.

Describe the general preparations for Cesarean section.

Usually these operations are performed in the hospitals. In case the operation is to be performed in the patient's home, the room selected should be near the bath-room, and one in which there is plenty of clear light during the day and proper adjustments for electric or gas light during the night. The temperature of the room should be about 80° F. The preparations for this operation are the same as for laparotomy in general, with additional preparations for the infant.

Describe the preparations of the patient for Cesarean section.

The general preparations of the patient are the same as for laparotomy, or any abdominal section. The patient should be given soft diet the day before the operation, and her hair should be shampooed, and she should receive a full bath. A cathartic is usually given at bedtime, followed in the morning by an enema. Before going to the operating-table the patient should void urine, or should be catheterized. In the latter case

the nurse should receive the surgeon's orders, and a specimen of urine should be saved for analysis. The nurse should also remove the patient's false teeth, if any, and all articles of jewelry, before adjusting her on the operating-table for the anesthesia.

The final preparations of the patient consist of shaving the field of operation from the ribs, extending over the abdomen, and half way down the thighs; after which the region should be scrubbed with tincture of green soap and rinsed with water, and later the field should be rinsed off with a solution of bichloride, 1 to 2000, followed with alcohol, 95%. A sterile dressing supported by a binder should be adjusted, and after the patient is placed on the operating-table the surgeon usually applies a coating of the tincture of iodine to the abdomen just before beginning the operation. No definite rules can be made for surgical baths, as different surgeons vary in their methods for the final preparations of the patients.

What does the list of supplies consist of for Cesarean section?

The list, according to Dr. De Lee, consists of the following supplies:

Twelve small laparotomy sponges. These are of four thicknesses of gauze, six inches square, sewed around the edges and carrying a piece of tape 10 inches long, firmly fastened to one corner.

Six large laparotomy pads. These are of six thicknesses of gauze, twelve inches square, sewed and tacked, but without tapes.

One jar of small surgical gauze sponges or pledgets.

One sterile receiver for baby.

One pair leggings.

Six gowns and head pieces.

Four pairs rubber gloves.

Five basins.

One pitcher, besides hot and cold water supply pitchers.

These articles are sterilized according to the usual methods. The antiseptic solutions are prepared according to the physician's usual practice.*

What instruments are used for Cesarean section?

The list of instruments, according to Dr. De Lee, consists of the following:

Two scalpels.

Two scissors, one angular.

Three tenaculum forceps.

Three sponge-carriers.

Twelve artery clamps.

Eight long pedicle clamps.

Two needle-holders.

Eight full curved round needles, $1\frac{1}{2}$ inches, for uterus.

Six shorter, half curved spear-pointed needles, for fascia.

Two long straight needles, for skin.

Two retractors.

Two rat-toothed tissue forceps.

One long uterine packing forceps.

One dozen large safety-pins.

Suture material. The physician will order this. No. 6 silk for the uterus; No. 0 catgut for the peritoneum; and medium silkworm-gut for the skin, are usually used. Some operators use catgut throughout.†

*Dr. Joseph B. De Lee's *Obstetrics for Nurses*, pp. 204-206. 1912.

†*Ibid.*, pp. 204-206. 1912.

How many assistants are required during the Cesarean section operation?

The surgeon requires four assistants besides the anesthetizer, including first assistant to surgeon; second assistant to pass instruments, sponges, etc.; third assistant to receive, and take charge of reviving the infant; and the fourth assistant or the nurse, who is required to render general service in handing supplies to the other assistants. She need not therefore be aseptic.

Describe the operation of Cesarean section.

After the final preparations of the patient are made, the sterile sheet and towels are arranged and pinned in place. As soon as the patient is fully under the anesthetic the surgeon makes an incision in the abdominal wall, and another incision in the uterus, and delivers the infant by the feet. He clamps the umbilical cord in two places and cuts the cord between the clamps. The infant is now handed to the third assistant, who stands ready and prepared to receive and take charge of the child. Meanwhile the surgeon proceeds immediately to remove the placenta and membranes. The patient is now given a hypodermic injection containing fifteen minims of aseptic ergot. The surgeon now proceeds to stitch up the incision made in the uterus, after which the peritoneal toilet is made and the abdominal wall is closed. Before closing the cavity, the nurse should carefully count the soiled sponges, laparotomy pads, instruments, etc. If any of these articles are found missing she should at once report it to the surgeon. The wound is then closed, and after that adhesive straps are applied to support the abdominal wall the same as in all operations of general laparotomy.

Describe the care of the patient after the operation.

The general care of the patient is the same as that for laparotomy section. The nurse should watch for symptoms indicative of internal hemorrhage, and she should frequently observe the lochial discharge, since the patient might have a post-partum hemorrhage. In case of persistent vomiting, or any signs of internal or external hemorrhage, the physician should be notified at once.

The patient's thirst may be quenched with about half an ounce of hot water frequently, and the physician may also order salt solution administered per rectum every six hours. Liquid diet is usually ordered for the first twelve hours. The patient's bowels should move on the second or on the third day, and the physician usually orders a cathartic which is followed a few hours later by an enema.

The nurse should obtain written orders from the physician, or carefully write down his verbal orders herself for reference. She should also note the patient's condition on the record-sheet, and in case of any abnormal symptoms, she should call the physician's attention to them.

Describe the symptoms of internal hemorrhage.

The patient's pulse becomes rapid, or running, and feeble; the respirations are rapid, and shallow, accompanied with yawning and sighing; the skin is cold and pale, and the patient becomes restless, etc.

Describe the symptoms indicative of peritonitis.

The patient has a rise in temperature, persistent nausea, vomiting, hiccough, extreme tympanites, severe pain in the abdomen, and constipation.

How soon are the sutures removed?

The sutures are usually removed about the tenth day.

Describe the operation of vaginal Cesarean section.

In an operation of vaginal Cesarean section the surgeon makes an incision through the anterior wall of the vagina, after which the bladder is pushed upward away from the uterus. Another incision is then made through the anterior wall of the uterus, and the infant is delivered. After the delivery of the placenta and membranes the incisions are closed with sutures.

When is this operation performed?

In cases where a rapid delivery is necessary to save the life of mother and child.

What preparations are required for the operation?

The general preparations are the same as for forceps operations, plus those for hysterectomy.

What is symphysiotomy?

Symphysiotomy is an operation which consists of enlarging the pelvis. It was invented in 1773, by Sigault, a medical student.

Describe symphysiotomy operation.

The operation consists of cutting through the symphysis pubis. This allows the bones to separate, and enlarges the cavity of the pelvis. The operation is not often performed, since pubiotomy and Cesarean section are taking its place to-day.

What is pubiotomy?

It is an operation on the section of the pubic bone at one side of the symphysis for enlarging the pelvis.

What instruments are required for pubiotomy operation?

The list, according to Dr. De Lee, requires the following instruments for pubiotomy operations:

Two trays, to be kept separate.

First tray:

One scalpel.

Two Gigli wire saws.

One special carrier or large needle.

Scissors.

One grooved director, broad.

Four artery clamps.

Four 8-inch pedicle clamps.

Needle-holder.

Four full-curved, spear-pointed needles, $1\frac{1}{2}$ inches.

Two retractors.

Uterine sound or metal catheter.

Second Tray:

Forceps and axis-traction forceps and all instruments given under forceps operations.*

Describe the operation.

Four assistants, besides the nurse, are needed for an operation of pubiotomy. The patient should be prepared the same as for any major obstetric operation, and should be placed on the operating-table in the lithotomy position, and two assistants—one on each side—are required to hold the patient's legs.

The first tray of instruments are used for opening the pelvis and for closing the wounds afterwards. The second tray of instruments are used for the second stage of the operation.

The Gigli, or wire-saw, is carried around the back

*Dr. Joseph B. De Lee's *Obstetrics for Nurses*, p. 212, 1912.

of the bone through either a small incision or a puncture. After the bone is severed the infant is delivered by forceps or by version. The ends of the bones separate one to two inches during delivery, and the sides of the pelvis are supported by assistants. After delivery of the infant the surgeon sterilizes his hands before touching the pubic wound, and after the lacerations, and the hemorrhage, if any, are attended to, the patient is carefully conveyed by the physician and his assistants to her bed, made ready by the nurse.

Describe the care of the patient after the operation for pubiotomy.

The nursing after an operation for pubiotomy is of the utmost importance. The patient must be kept absolutely quiet on her back. In changing the under sheet the nurse should exert great care so as not to turn the patient, or to do anything to jar, or to move the pubic bone. Great care therefore must be taken to prevent the lochial discharge gaining access to the pubic wound. The patient's bed should be made up as usual, with a symphysiotomy bed placed over it, upon which the patient should rest.

After the operation the patient's pelvis is dressed with strips of adhesive plaster. The strappings and the binder support the pubic bones in position, and they must be watched constantly so that they do not become displaced. It is difficult to catheterize the patient, since she is allowed to separate her legs only a few inches. Whenever the dressings are to be changed, or the patient attended to in any way, the symphysiotomy bed should be raised about twelve inches, after which the nurse should unpin the strips of the binder, and draw them aside. The vulva-guard should be adjusted firmly

above, and remain loose below, so that the lochia will flow downward, and the dressing should be arranged so as to cover the entire wound.

How is the symphysiotomy bed made?

The symphysiotomy bed consists of an iron frame fitted inside the regular bed. It is adjusted so that it can be raised up about twelve inches and hung on four hooks—two at the head, and two at the foot—of the bedstead. The nurse should cover the iron frame with strong muslin. In the center of the frame the muslin should be cut into strips which should be pinned securely on each side of the frame with very strong safety-pins. Whenever the patient is attended to, dressed, bed changed, etc., the frame should be raised up a foot, and the strips of muslin are easily unpinned.

Embryotomy.

What is meant by embryotomy?

Embryotomy consists of an operation which mutilates the fetus.

Mention some of the operations.

Decapitation, craniotomy, and evisceration.

Describe the operation of decapitation.

Decapitation is an operation in which the head of the fetus is separated from the body at the neck by means of strong scissors, or a blunt hook invented by Carl Braun.

What are the indications for decapitation?

In case of an impacted shoulder presentation where the body of the infant is firmly wedged in the pelvis so

that it cannot be turned, or straightened out and be extracted, and in cases of locked twins.

What is meant by craniotomy?

It consists of an operation for perforation and extraction of the fetal head.

Describe the operation of craniotomy.

Craniotomy is an operation in which the skull of the infant is opened with sharp scissors, or a long trephine, so as to evacuate the brain matter. The bones of the head are then crushed together so as to reduce its size into as compact a mass as possible for extraction.

What are the indications for craniotomy?

The infant's head may be too large, or the patient's pelvis may be too small, to allow of natural delivery. Cesarean section is often advised instead of embryotomy in such cases.

What is meant by evisceration?

Evisceration is an operation in which the thorax or the abdomen of the infant is opened so as to remove portions of the viscera. It is indicated in cases where the abnormal size of the infant's body prevents delivery.

What preparations should be made for embryotomy operations?

The general preparations for embryotomy are the same as for any major obstetric operation. The instruments are selected by the surgeon.

Minor Operations

Mention some of the minor operations.

Perineorrhaphy, vaginal douches, uterine douches, vaginal tamponade, uterine tamponade, hypodermoclysis, etc.

What is meant by perineorrhaphy?

Perineorrhaphy consists of reparation of the pelvic floor or the perineum. The physician usually repairs the lacerations immediately after delivery before placing the patient in bed. (See Chapter VIII.)

What are the most serious complications to guard against in the care of patient after perineorrhaphy?

The nurse should guard against tearing and infection of the stitches.

How can the tearing and infection of stitches be prevented?

The nurse should sterilize her hands the same as when preparing for a surgical dressing, and use great care in removing the vulva guards. She should bathe the genitals gently so as not to let the cotton sponges catch, and pull the free ends of the sutures. In irrigating the stitches the solution should not be allowed to flow with any force. The patient should not be allowed to strain during evacuation of the bowels; the stitches, and the surrounding parts must be irrigated and carefully dried after each urination and defecation, and a sterile dressing and vulva pad applied. In case the patient complains of the stitches pricking, the nurse should wrap the end of the sutures in a piece of sterile gauze.

Mention the necessary instruments for removal of the sutures.

The necessary list includes the following instruments:

One speculum.

Two scissors.

Two artery forceps.

One tissue forceps.

Describe the removal of the sutures.

The nurse should see that there is a good light in the room, and she should have everything in readiness and place solutions, supplies, instruments, electric light, etc., conveniently at hand for the physician. The patient should be placed across the bed in the lithotomy position, draped with a sheet, while the nurse usually holds her legs during the operation. The patient should be kept quiet for several hours after the stitches have been removed.

What is a tampon?

A tampon consists of a pledget of gauze or cotton inserted into a cavity to stop a hemorrhage, or to absorb secretions.

What is meant by tamponade?

The insertion of tampons.

Describe vaginal tamponade.

Vaginal tamponade consists of packing the vagina firmly with gauze or cotton tampons.

Mention the necessary instruments for uterine tamponade.

Specula.

Vulsellum forceps.

Long uterine packing forceps.

Describe uterine tamponade.

The patient should be placed across the bed or on an improvised operating-table in the dorsal position, and covered with a sterile sheet. Her legs should be supported by a leg-holder, or on chairs. The physician requires sterile or antiseptic gauze packed in jars for tampons in this operation. The nurse should wrap the jar of gauze in a sterile towel, and hold it at one side of the patient's vulva about two inches below the entrance to the vagina. In packing the uterus the physician inserts the gauze with the aid of long uterine packing forceps. After the operation a sterile vulva pad and a T-binder should be applied. The patient should be kept quiet and not allowed to toss about in bed.

Why are vaginal douches ordered?

Vaginal douches are sometimes ordered to promote cleanliness of the patient; as a local stimulant for allaying of inflammation, and in case of hemorrhage.

What solutions are usually ordered for vaginal douches?

The solutions include sterile water, normal salt, lysol, and bichloride solutions.

What is the usual temperature of solutions for douches?

The temperature of vaginal douches is usually 110° F.

What is the usual temperature of a douche given to relieve hemorrhage?

The temperature of the solution administered to relieve hemorrhage is usually ordered 120° F.

Why should a douche having a temperature of 110° F. not be given in case of hemorrhage?

It is not hot enough to contract the blood-vessels, and

simply *warm* water dilates the vessels and would increase, rather than allay, hemorrhage.

What precautions should be taken in giving a vaginal douche?

The nurse should adopt absolute sterile precautions in giving a vaginal douche the same as for catheterization, or any surgical dressing. After preparing everything needed, the nurse should place the patient in a dorsal position. Her gown should be folded up under the shoulders, and a sterile douche-pan should be placed under the buttocks so that the hips are higher than the shoulders. The nurse should avoid all unnecessary exposure of the patient, and see that there are no drafts through the room.

The douche-bag should be hung about two feet above the patient's buttocks. Before inserting the douche-nozzle the air should be expelled by allowing the solution to flow through the tube. At the same time great care should be observed in inserting the nozzle so that the end does not come in contact with the external genitals. The nozzle should be inserted slowly, slightly downward, and backward. The douche should not be given rapidly. The current should be discontinued before all the solution escapes from the bag. The nurse should observe and record the color of the lochial discharge, clots, shreds of tissue returned in the douche, and note the odor, if any. A vaginal douche should not be administered without the physician's orders.

What precautions should be taken preparatory for the uterine douche?

Everything required for the operation should be absolutely sterile. The nurse should have a large supply

of both sterile hot and cold water, since the uterine douche is often copious. The patient's room should be warm and have a clear light, and the floor should be protected with oil-cloth, or newspapers, covered over with a sheet. All necessary exposure of the patient should be avoided. She is usually placed across the bed, although some physicians prefer an improvised operating-table instead of the bed. A Kelly pad should be placed under the patient's buttocks, and she should be draped with a sterile sheet, or with towels. After the operation the patient should be kept quiet.

Is it the nurse's duty to give the uterine douche?

No, unless specially required by the physician to do so.

What instruments are needed for giving the uterine douche?

One broad speculum.

Two vulsellum forceps.

One long uterine applicator.

One uterine douche-point.

When is uterine curettage required?

Uterine curettage is required in the treatment of puerperal infection and in cases of abortion. The object of this operation is to remove particles of the placenta, or decidua, which may be retained and become decomposed in the uterus.

Describe the preparations for the operation of uterine curettage.

The preparations for uterine curettage are the same as those for uterine douche. In addition, there should be a supply of iodoform, lysol, or sterile gauze for packing the uterus in case it should be needed. The patient is

usually placed on an operating-table for the operation.

Uterine curettage is performed only in septic cases, and the nurse should take great precaution so as not to convey the infection to the patient's breasts, or to the eyes and umbilicus of the infant. She should use the utmost care in handling the instruments during the operation, and not prick her fingers, which might lead to infection.

What instruments are required for uterine curettage?

Weighted speculum.
Tenacula speculum.
Uterine dilator.
Curettes (sharp and blunt).
Uterine douche-nozzle.
Uterine applicator.
Packing-forceps.
Scissors.

What is hypodermoclysis?

Hypodermoclysis is an operation consisting of the introduction of fluid into the cellular tissue.

What is intravenous infusion?

It consists of introducing fluid directly into a vein.

When are hypodermoclysis and intravenous infusions given?

They are usually employed to replace the blood lost in severe hemorrhages; to stimulate the heart action, and to counteract several different conditions of poisons in the body, including uremia, septicemia, etc.

Mention another method for introducing fluid into the body for a similar purpose.

Another method, known as enteroclysis, consists of a

slow injection of fluid into the rectum commonly called "Murphy's Method"; and several other kinds of enemata are given for similar purposes as hypodermoclysis.

What fluid or solution is generally used for hypodermoclysis and enteroclysis?

A saline or normal salt solution.

What is the special effect of the normal salt solution when used for transfusion?

The normal salt solution has about the same specific gravity, and is of the same degree of alkalinity, as the blood of the body, and it is easily absorbed and assimilated. It acts as a stimulation to the heart action, which is due to the forcible contractions caused by the increased amount of fluid.

When was normal salt solution first used as a fluid for transfusion?

During the year 1881, Schwartz first proved that a normal salt solution was effective in supplying the loss of blood in animals. Later, von Ott and Bischoff were the first physicians who adopted the use of the solution in the treatment of anemic patients.

How is normal salt solution prepared?

The normal salt solution, 0.7 per cent., which is usually ordered, is prepared by taking one ounce of stock salt solution to one quart of sterile water.

How is the normal salt solution prepared in case the stock salt solution is not conveniently at hand?

In preparing a normal salt solution on an emergency case, take one and one-half dram, equal to one and one-half teaspoonfuls sodium chlorid—common table salt; dissolve it in one quart of water, place it in a covered

enameled vessel, and boil fifteen minutes. It should then be filtered through sterile cotton into a sterile douche-bag, and corked with a pledget of sterile cotton.

How is the required temperature of a normal salt solution obtained?

The usual temperature required for a normal salt solution is about 110° F., as the solution cools off several degrees while passing through the long rubber tubing. In order to quickly reduce the temperature to the degree ordered, the nurse should hold the sides of the douche-bag under the cold water faucet. At the same time she should insert a sterile bath thermometer in the mouth of the bag until the required temperature is obtained.

What is the usual temperature required for administering a saline, or normal salt solution?

The solution should have a temperature of about 100° F., when administered.

What instruments are required for hypodermoclysis?

The list, according to Dr. De Lee, contains the following instruments:

One two-quart douche-bag, or can with tube six feet long.

One quart measure.

One bath thermometer, registering over 212° F. This is removed from its wooden case.

One salt solution needle.

What instruments are required for intravenous transfusion?

The list, according to Dr. De Lee, contains the following instruments:

- One small sharp scalpel.
- One small curved needle.
- One pair sharp-pointed scissors.
- One fine rat-toothed dissecting forceps.
- One artery forceps.
- One fine-pointed medicine dropper or special transfusion cannula.
- One strand silk.*

What preparations of instruments, solutions, etc., should be made for hypodermoclysis operation by the nurse on private cases?

All rubber articles employed should first be wrapped in several layers of toweling before boiling. The douche-bag, or the enamel can, rubber tubing, quart measure, etc., should be boiled in a one per cent. solution of soda for fifteen minutes in a covered enameled kettle. The bath thermometer should be scrubbed with some anti-septic solution and placed in alcohol, 95%, until needed. After boiling the other articles they should be rinsed inside and outside with hot sterile water, and wrapped in sterile towels until used. The instruments should be sterilized separately, and left in the enameled pan in which they were boiled until used. They should be covered with a sterile towel.

What portions of the body are usually chosen for administering a saline, or normal salt solution?

The portions of the body usually chosen for injection of fluid in hypodermoclysis include the chest beneath the mammary glands, the abdominal wall, the nates, and the thighs. The vein usually selected for injecting an

* Dr. Joseph B. De Lee's *Obstetrics for Nurses*, pp. 225-226. 1912.

intravenous infusion is the *median cephalic vein* of the arm.

What preparation of the patient's skin is made for subcutaneous and intravenous infusions?

The skin of those portions of the body chosen should be thoroughly scrubbed with warm water and soap, followed by a solution of lysol, and then rinsed off with alcohol, 95%.

Describe the operation for intravenous infusion.

After the preparation of the skin, the physician usually selects the vein on the inner side of the elbow-joint for intravenous infusion. In order to engorge the vein, a bandage should be tied firmly around the patient's arm, above the elbow-joint. At the time the physician is ready to introduce the needle into the vein, the solution should be allowed to run through the needle, so as to expel the air in the rubber tube. As soon as the needle is inserted into the vein, the bandage should be removed. After the operation the wound in the skin is stitched and an aseptic dressing applied. The puncture made for subcutaneous infusion may be dressed with collodion or with adhesive plaster.

Abortion, Miscarriage, and Premature Labor

What is understood by the term abortion?

Abortion is a term used when the embryo is expelled before the end of the third month of gestation.

What is miscarriage?

Miscarriage is a term used when expulsion of the fetus occurs between the third and seventh months of gestation.

How is abortion classified?

Abortion is classified as spontaneous and artificial.

How is artificial abortion divided?

It is divided into two classes known as therapeutic and criminal abortion.

What is meant by therapeutic abortion?

It is a term used to distinguish an operation ending pregnancy before the fetus is viable from the criminal operations performed by midwives and professional abortionists.

When should therapeutic abortion be performed?

The induction of abortion is justifiable whenever the operation offers the only chance of saving the life of the patient.

What are the indications for therapeutic abortion?

Excessive vomiting, Bright's disease of the kidneys, displacement of the uterus, tumors, etc.

What are the symptoms of abortion or miscarriage?

Pain of an intermittent character and hemorrhages.

What should be done to prevent a threatened miscarriage?

The nurse should notify the physician, and place the patient in bed. She should be kept perfectly quiet; a sterile vulva pad should be applied to the vulva, and the foot of the bed should be elevated. In case the hemorrhage is profuse, the nurse should adopt aseptic precautions, and is justified in packing the vagina with sterile gauze, or cotton, while awaiting the arrival of the physician.

In case miscarriage occurs before the physician arrives, what should the nurse do?

The patient should be kept quietly in a recumbent position. The nurse should sterilize her hands—the same as for any surgical dressing; wash off the patient's genitals with sterile water, or a solution of lysol, one per cent., or bichloride, 1 to 2000, may be used. Then apply a sterile pad over the vulva, and watch for any signs of hemorrhage. In case any clots are expelled they should be saved for the physician's inspection, etc.

Mention some of the immediate dangers resulting from abortion.

Hemorrhages and septicemia, or blood poisoning.

Are criminal abortions of common occurrence?

Yes, criminal abortion has spread greatly, causing the loss of numerous lives, and wrecking homes. A nurse should never allow herself to become a party to such an operation.

What preparations are made for an operation of therapeutic abortion?

The same preparations should be made as required for the induction of premature labor. The instruments used are also the same, with the addition of the uterine dilators, and the curettes.

Describe the care of the patient after the operation.

The care is the same as required after a normal labor.

What is premature labor?

Labor is considered premature when it occurs between the seventh and ninth month of gestation.

What is the object for induction of premature labor?

The object of this operation is to induce labor pains.

What are the indications for induction of premature labor?

Threatened convulsions, placenta prævia, eclampsia, pelvic deformities, organic diseases, death of fetus in the uterus, and many other complications.

What methods are usually adopted for the induction of labor?

Krause's method for induction of labor is most usually adopted. It consists of the introduction of a soft rubber bougie (No. 16 American size) into the uterus between its wall and the membranes. The physician carefully inserts the bougie about seven or eight inches within the uterus, leaving only two inches projecting outside in the cervix of the vagina.

Another method consists of the introduction of a rubber bag inside of the uterus, and slowly filling it with sterile water or some antiseptic solution, after introduction. The bags adopted for this method include Barnes's fiddle-shaped rubber bag, and de Ribes's conical-shaped, inelastic, water-proof, silk bag. Still another method consists of Braun's colpeurynter, or a balloon-shaped rubber bag, which is used to distend the vagina.

What is colpeurynter?

It is dilatation of the vagina by means of the colpeurynter.

What is the effect caused by the rubber bougies, and of the rubber, or the silk bags, in the uterine cavity?

The rubber bougies lying within the uterine cavity,

irritate, and cause uterine contraction. The rubber, or the silk bags, in addition, as an irritant, also mechanically expand, and thus dilate the cervix. It is a more rapid method for producing the desired uterine contraction than Krause's rubber bougie method.

What preparations are made for induction of premature labor?

The preparations are the same as those made for any obstetric operation. The patient should be placed on an improvised operating-table; some physicians order a vaginal douche, or administer it themselves before the insertion of the rubber bougies, or the bag dilators. In cases where extreme antiseptic precautions are followed, the operation for induction of premature labor is seldom attended with any danger. But in cases where asepsis is omitted, the operation, too, often proves dangerous, and a menace to numerous lives.

What preparations should be made for the reception of the infant, delivered after an operation for induction of premature labor?

The nurse should have an improvised incubator in readiness to receive the premature infant. (See Chapter XV.)

What instruments are required for induction of premature labor by the rubber-bag method?

The list, according to Dr. De Lee, includes the following instruments:

- A colpeurynter or Barnes' bag.
- A long uterine dressing forceps.
- Two specula
- Scissors.
- Two short artery forceps.

One Davidson syringe, *in working order*.

One strand linen bobbin, 20 inches long.*

What instruments are required for induction of premature labor by Krause's rubber bougie method?

The list, according to Dr. De Lee, includes the following instruments, added to the list used for the rubber-bag method:

Two soft-rubber solid bougies (No. 16 American size).

The catheters and all rubber goods are sterilized by boiling in pure water for thirty minutes in a tightly closed vessel. They must be wrapped in at least four layers of a thick towel to insure them against being burnt by lying against the hot metal.*

* Dr. Joseph B. De Lee's *Obstetrics for Nurses*, pp. 231-232. 1912.

CHAPTER XII

COMPLICATIONS DURING LABOR

Mention the most common complication which the nurse is liable to meet with during a case of labor.

One of the frequent complications is the delivery of the infant before the arrival of the physician.

Is it advisable for the nurse to assume the responsibilities during the management of labor alone?

The nurse should not assume the responsibilities except when emergency makes it absolutely necessary.

How should the nurse proceed at delivery in case the physician does not arrive in time?

In case the nurse finds herself alone in charge of delivery of the infant, she should first allay the fear and anxiety of both patient and her family, by reassurances that the labor is a normal one, etc.

The nurse having prepared everything as required for a normal labor (see Chapter VIII), places the patient in bed, near the edge, in a right-handed position. After thoroughly sterilizing her hands, she should cleanse the patient's external genitals thoroughly, using antiseptic solutions, such as lysol, one per cent., or bichloride, 1 to 2000. The patient should be covered with a sterile sheet, or towels, and a sterile obstetrical pad should be placed under her buttocks. In case the sterile obstetrical pad is not at hand, a clean, heavy bath-towel, covered

with sterile gauze, can be used. The nurse should have everything required conveniently at hand.

As the infant's head comes down and begins to distend the perineum, the nurse should support the perineum and the pelvic floor, by making pressure upward, and backward. Allow the head to come through slowly; if it comes too quickly, the nurse should pass her left arm between the patient's thighs, and restrain the head by gentle pressure on its top with her left hand. The patient should be directed not to bear down too hard. The head should descend between each pain, and just as the head is about to escape from the vulva, the nurse should push it upward against the pubic arch with one hand, while with the other hand she should endeavor to push back the anterior edges of the vulva behind the occiput. The head is then allowed to roll up over the pubis, the perineum slips over the infant's face, and under its chin.

As soon as the head is delivered the nurse should feel about the infant's neck to ascertain whether the umbilical cord is around the neck or not. If so she should gently draw the cord to one side, and slip it over the head. No force should be exercised in loosening the cord for fear of injuring it. Note how the occiput has rotated to the same side of the patient as it did when the head entered the pelvis at the beginning of labor. The eyes and mouth of the infant should be washed out with sterile water. While the shoulders of the infant are being delivered, the nurse should raise the head with the left hand, and with her right hand crowd the shoulders upward toward the pubis so as to prevent too much distention of the perineum.

As soon as the infant is delivered it should be placed on its right side and covered warmly. The patient

should also be covered, while the nurse now places one hand on her abdomen, and grasps the uterus firmly. She should not massage the uterus unless there is a hemorrhage or the uterus balloons out under her grasp. In case the infant shows any signs of asphyxia, or the patient has a hemorrhage, or the placenta is expelled, the nurse should tie the umbilical cord in two places, and cut it between the two ligatures at once. Otherwise the nurse is justified in waiting until the arrival of the physician to deliver the placenta and separate the cord, etc., so long as it is not over an hour.

The umbilical cord should be securely tied with a square knot, using sterile tape, or ligatures. The cord should be carefully examined after it has been severed in order to observe any oozing of blood. The nurse should first tie the cord about an inch from the skin margin of the umbilicus, and tie a second time a couple of inches from the first ligation. The cord should be cut between the two ligatures. While tying and cutting the cord some member of the family, or the patient herself, should be instructed to hold the fundus.

As soon as the infant has been separated from the mother it should be wrapped in a warm flannel receiver and placed on its right side in a warm place. The nurse now should proceed to remove all soiled pads, dressings, bed linen, gowns, etc., and replace them with clean linen. Meanwhile, in case there is no extra obstetrical pad, the nurse should fold a clean sheet and adjust it under the patient's buttocks, and place a sterile vulva pad over the vagina, disturbing the patient as little as possible.

The nurse should watch the uterus and see that it does not become relaxed. She should again place her hand gently on the patient's abdomen, and firmly hold the uterus while waiting for the termination of the third

stage—the expulsion of the placenta—which usually occurs within fifteen minutes to a half-hour after the delivery of the infant. During this interval the nurse should keep an observant eye on the infant, and examine the cord.

In separation of the placenta the nurse will notice that as the after-pain comes, the uterus becomes very hard, and rises up under her hand, and at the same time the umbilical cord advances from the vagina. The nurse expels the placenta by pressure on the top of the uterus downward and forward, during the height of an after-pain. As the placenta appears at the vulva, the nurse should grasp it in her full hand, and with gentle, even traction, draw the membranes after it so that they do not tear off. She should take plenty of time, using no force whatever. The placenta and membranes should be saved for the physician's inspection.

Breech Presentation.

How should the nurse proceed in case of breech presentation, during the physician's absence?

In breech presentation avoid all traction on the infant's body before the arms are delivered, since it might cause distention of the arms above the head. Pressure should be made on the fundus uteri in delivering the shoulders and head. The infant should be received in a warm sterile towel, and everything required to revive it should be near at hand in case of asphyxia, which is not unusual in breech delivery. (See Asphyxia, Chapter XIV.)

As soon as the breech of the infant appears at the vulva the nurse should place the patient across the bed, in a lithotomy position, with her hips over the edge of

the bed. After the infant is delivered as far as the umbilicus, the cord may be pulled down a little to prevent pressure on it when the head is born. Wrap the exposed portion of the body in a warm, sterile towel. At the time the shoulders are to be delivered, the patient should be requested to bear down during the pains. At the same time a steady downward pressure should be made on the fundus uteri, through the abdominal wall. This may be done by the husband, or some relative of the patient, who is present. As soon as the infant's arms are delivered, and, in delivering the head, the nurse should insert two fingers in the infant's mouth, making gentle traction downward and out. At the same time she should place her other hand on the lower part of the abdomen, over the fundus, making a downward and backward pressure. Preparations are the same in breech delivery as for all normal cases of labor. (See Preparations for Labor, Chapter VIII.)

What is the great danger resulting from prolapse of the umbilical cord?

The prolapse of the umbilical cord is a serious accident, caused by the compression of the cord; the circulation of the maternal blood is shut off and the infant is therefore deprived of oxygen which results in the asphyxiation of the child.

Does prolapse of the umbilical cord occur frequently?

No, according to Dr. De Lee, the umbilical cord prolapses, and appears at the vulva, on an average of one case out of four hundred.

What should the nurse do in case of prolapse of the umbilical cord?

The nurse should send for the physician at once.

Place the patient in bed in the knee-chest position, and after thoroughly sterilizing her hands the nurse should push the cord back into the vagina. It should be held in position by a pledget of sterile cotton, or a sterile vulva-guard, pinned firmly in place to the T-binder. The patient, meanwhile, if kept in the knee-chest position, or in the Trendelenburg position, becomes fatigued, and complains of great distress, and should not remain in either position any length of time. The nurse should relieve the patient by placing her on her left side, with two pillows placed under her hip, in order to elevate the pelvis. This is known as the elevated Sims position, and it is often preferred, since it is a comfortable position for the patient.

How should a patient be placed in the Trendelenburg position?

An ordinary wooden chair, padded with thin pillows, or a blanket, covered with a rubber sheet, followed with a sterile sheet, should be adjusted so that the back of the chair is pushed under the patient.

Mention a few other complications which sometimes occur during labor.

Various complications may occur during labor, such as eclampsia, placenta prævia, and detachment of the placenta. (See Chapter IV.)

What is the cause of a post-partum hemorrhage?

The cause of post-partum hemorrhage may arise from a laceration of some portion of the genital tract, or from weakness of the uterine muscle—atony of the uterus. This may be the result of general weakness of the patient in case she has albuminuria or anemia, followed by a long, tedious labor. The patient may have a natural

tendency to bleed; or retained portions of the placenta, membranes, clots in the uterus, and after over-distention of the uterus, are liable to cause hemorrhage. (See Chapter IV.)

Describe the symptoms of post-partum hemorrhage.

The general symptoms consist of external hemorrhage, gushing from patient's vagina, pallor of face, skin covered with cold perspiration, pulse running and feeble, respirations shallow, and sighing, restlessness, thirst and desire for more air to breathe.

What should the nurse do in case of a post-partum hemorrhage?

The nurse should send for the physician immediately. Elevate the foot of the patient's bed, grasp the uterus through the abdominal wall, and massage it firmly. Administer a dram of ergot, if at hand, and in case this is not effectual, the nurse is justified in giving a hot vaginal douche, 120° F., consisting of sterile water, or a saline or normal salt solution, or even lysol solution, one per cent. As a last resort the nurse should assume the responsibility of packing the vagina as tightly as possible with sterile gauze or absorbent cotton, and apply firm pressure on the fundus. The patient should be kept warm by placing hot water-bags around her. In case the pulse requires stimulating, the nurse should give the patient hot coffee, or if absolutely necessary, a hypodermic injection of strychnine sulphate, grain $\frac{1}{40}$, or camphorated oil. The nurse should have an ample supply of both hot and cold sterile water on hand for making antiseptic solutions and douches; the physician may also give hypodermoclysis to restore the loss of blood of the patient, etc. There should be an extra supply of anti-

septic gauze ordered in case the physician wishes to tampon the uterus. (See Chapter XI.)

Describe the care of a patient after a post-partum hemorrhage.

The patient should be kept absolutely quiet. The foot of her bed should not be lowered until the physician directs the nurse to do so, which usually is done one to four days after the hemorrhage. The bed should then be lowered by degrees, and never suddenly, as it might result in the patient's fainting as the blood descends to the lower extremities from the head. The physician orders enematas of saline, or normal salt solution, and the diet usually consists of milk, eggs, meat-juices, and later broiled steak, bone-marrow, and vegetables, such as lettuce and spinach.

In bathing the patient after post-partum hemorrhage, the nurse should use great care not to rub the body too hard with the towel. Clots may be formed in the large veins, and vigorous friction might loosen them and they would be carried off in the general circulation and lodge in the heart, or in the lungs. In such a case, embolism results, and death of the patient is liable to occur in a very short time.

CHAPTER XIII

COMPLICATIONS DURING THE PUERPERIUM

What complications are liable to occur during the period of the puerperium?

Septicemia, or puerperal infection, puerperal insanity, thrombosis, phlegmasia alba dolens, or milk-leg, diseases of the breasts, etc.

Describe septicemia.

Septicemia is a febrile disease in nature, but it is sometimes non-febrile. It is the result of septic infection during labor, or the puerperium, which may be mild, or severe; local, or general, and assumes many forms, or varieties.

What are the general causes of puerperal infection?

The general causes of the infection are the result of absorption of septic germs introduced within the genital tract from without. The infectious germs may be carried by the physician, the nurse, or even the patient, or any one else, who enters the lying-in room. Instances are recorded where friends who have come direct from an obstetrical patient suffering from puerperal infection, or others affected with running ears, abscesses, ozena, erysipelas, scarlet fever, and diphtheria, have spread the septic germs. The infection may also be transmitted by the lochial discharge from one puerperal patient to another, and it may also result from the retention of portions of the placenta, or membranes in the

uterus. The disease, in fact, may arise from neglect of antiseptic cleanliness, or the introduction of *anything not absolutely sterile* within the genital tract. The patient therefore should be instructed to keep her hands from coming in contact with the pelvic region.

Usually in cases of septicemia the physician or the nurse are censured for carelessness by the patient's family. Strict aseptic precautions should therefore be closely observed, and all relatives and friends of the patient should be excluded from the lying-in room.

How does puerperal infection take place?

The septic germs which come in contact, or become introduced within the genital tract, are absorbed by the blood-vessels, and the lymphatics existing in the lacerated surface of the vagina, cervix, or the interior uterus, especially the placental site.

When does puerperal infection usually develop?

Puerperal infection usually develops about the third or fourth day after delivery, or it may occur earlier, or later.

Describe the general symptoms of puerperal infection.

In severe attacks the patient complains of general discomfort, severe headache and a chill, followed by a rise of temperature to 104° F., or higher; the pulse becomes rapid, feeble, and sometimes irregular in character. The patient's face becomes anxious and pale; the tongue, at first heavily coated, becomes dry, and brown, the lips are parched, accompanied with an excessive thirst. The abdomen becomes tender in the region of the uterus; the lochial discharge diminishes, and becomes lighter in color, accompanied with a fetid odor; and the

secretions, if any, in the breasts cease. In some cases peritonitis develops.

What symptoms indicate peritonitis?

Besides the general symptoms mentioned for puerperal infection the patient's face assumes a pinched, anxious appearance, the respirations become shallow, accompanied with hiccough, nausea, vomiting, pain in the lower region of the abdomen, and tympanites. The urine becomes scant and high colored, and it may contain albumin; constipation, and sometimes diarrhoea of the bowels are present. The patient may have alternate intervals of delirium and stupor, followed by coma. In case of the complication of peritonitis during puerperal infection, the patient usually dies in a few days.

What general precautions are taken as a preventive against puerperal infection?

Strict aseptic precautions are observed by the physician, who usually avoids too frequent vaginal examinations of the patient during labor, and observes the utmost care so as to prevent laceration, or bruises of the perineum, etc. He uses nothing, in making his examinations of the genital tract, that is not absolutely sterile.

The nurse also observes aseptic measures, and should not go from an infectious case directly to an obstetrical patient, but usually allow a week to elapse, during which she should take one or more bichloride baths, 1 to 3000, and shampoo her hair with the same solution, followed by an application of alcohol, 95%.

Describe the aseptic measures observed by the nurse during labor and the puerperium.

The nurse's duties during labor are practically the same as those for laparotomy. She should provide

sterile supplies, such as basins, solutions, towels, sponges, etc., and thoroughly sterilize her hands before touching the patient. A pair of long forceps prove useful in passing the supplies to the physician, and when not in use they should be kept immersed in a jar of lysol solution, one per cent.

During the puerperium the nurse should thoroughly sterilize her hands each time she cleanses the patient's genitals. Everything needed should be carefully arranged near the patient's bed, after which the nurse should sterilize her hands, remove the vulva guard and bathe the genitals with sterile cotton sponges and warm antiseptic solution. The same aseptic care must be observed in dressing the infant's umbilicus and in cleansing the eyes. Each time the infant is put to the breast the nipple should be sponged off with sterile cotton, saturated with sterile water. Care must be taken so that the patient's or the nurse's fingers do not come in contact with the nipples, since infection is readily transmitted from the lochial discharge to the breasts.

Describe the general care of the patient during puerperal infection.

In the general care of a patient during puerperal infection good nursing is equally as essential as both the medical and surgical treatment—since the chief treatment consists of fighting the constitutional effects of the septic poisons in the system. 1. By the removal of all foreign matter from the parturient canal, which may be done by curettage, uterine, or vaginal douches. (See Douches, Chapter XI.) 2. By every effort to strengthen the patient's resisting powers with nourishing foods, tonics, stimulants, etc. The physician may administer anti-streptococcus serum and prescribe Crede's ointment

—a preparation of metallic silver—as a general inunction for the patient's body, and other remedies to counteract the infection. 3. The patient's room should be well ventilated, sunny, and quiet, and no visitors should be admitted until convalescence is assured. A sponge bath containing Florida water should be given daily, and a soap-and-water bath should be given at least twice a week. The genitals should be frequently cleansed with some antiseptic solution, as the lochial discharge is irritating; the physician usually orders the required solution according to his practice. The nurse should also call the physician's attention to the frequency and character of the patient's defecation; in case of diarrhoea he prescribes something to allay the condition, and for constipation usually orders an enema.

What is usually done in case of tympanites?

The physician usually orders turpentine stupes applied to the patient's abdomen, and the insertion of the rectal tube to relieve the gas; and a carminative enema may also be ordered. In cases of abdominal symptoms of peritonitis, high fever, etc., ice-bags, or hot applications are ordered over the abdomen, and cool sponge-baths, to reduce the temperature, as directed.

What should be remembered in case the patient becomes delirious?

The patient should be constantly watched, and the nurse must not leave the bedside, or turn her back for an instant, as she is liable to injure her infant, if present, or jump out of the window.

What should be done in case the patient has a chill?

She should be given hot drinks, and surrounded with hot water-bags, or bottles, and covered with warm woolen

blankets. As soon as the patient begins to perspire her body should be wiped dry with warm, soft towels, and then rubbed with warm alcohol, 95%, in order to refresh, and prevent her from taking cold, etc.

What precautions should be observed to prevent bed-sores, or decubitus?

The nurse should examine the sacrum and the bony prominences of the patient's back several times during the day. In case the parts are threatened with bed-sores all pressure should be relieved by the use of an air-cushion, or an invalid's bed. The patient's position should be frequently changed, and her back washed off with hot water and castile soap three times daily, massaged with alcohol, and rubbed with sterile olive oil and powdered.

Describe the patient's diet during puerperal infection.

It should consist of liquid, and soft diet:—milk, tea, whey, beef tea, beef juice, broths, oyster and clam stews, and other concentrated liquid foods, as directed, including samatos, peptonoids, tropon, etc. In case the patient's stomach rejects food, little can be done for her. Vomiting may be relieved for a short time only by washing out the stomach; and a saline solution may also be administered by hypodermoclysis or a rectal enema. In case of extreme wasting of the patient's body the physician sometimes orders inunctions of benzoated lard.

Describe enteroclysis or Murphy's drop method.

It consists of a slow, continuous injection of a saline solution into the rectum—often ordered in the treatment of puerperal infection. The saline solution contains two drams of common table salt to one quart of sterile water. In administering the injection the bed should be well

protected, the same as for an enema. The irrigation can, or douche-bag, should be hung on the bed about eight inches above the patient. The solution should be kept warm by the aid of a hot water-bag hung beside the douche-bag, and both should be wrapped in a bath towel. A rubber catheter should be connected on the end of the tubing of the douche-bag, and in order to regulate the flow of the solution, a pair of artery forceps may be used to clamp the tubing so as to allow the solution to escape from the catheter, drop by drop. After the air is expelled from the tubing by allowing the solution to run freely through the catheter, it should be oiled, and inserted about six inches in the patient's rectum. Absorption of the solution may occur as fast as the solution flows into the rectum, or it may not be retained long before it is expelled. As soon as the solution in the douche-bag has been injected the catheter should be allowed to remain in the rectum for a few minutes, in order to prevent expulsion of any of the solution.

What is the effect of the saline enteroclysis?

The saline solution administered by Murphy's drop method stimulates the lymphatics of the patient's pelvis, and aids also in washing the poisons out of the system.

How long does it require to administer two quarts of saline solution by the Murphy drop method?

It requires one and one-half to two hours.

Describe the surgical treatment in cases of puerperal infection.

The nurse is often called upon to prepare the patient for an uterine douche, curettage, and sometimes for a major operation; the latter consists of the removal of the

uterus either by the vaginal orifice, or by an abdominal section. (See Chapter XI.) Vaginal douches are sometimes ordered, although many physicians do not approve of them generally.

Is a graphic record-sheet important on septic cases?

Yes, a graphic history-sheet aids the physician in acquainting himself with the case, and it should therefore be kept. The patient's pulse, respiration, and temperature should be taken every four hours, and the entire condition during the day and night should be carefully recorded.

Should a patient with puerperal fever nurse her infant?

No, it is safer *not* to allow the infant to nurse, since the patient's vitality is low during infection, and the infant might easily become infected by close contact with the breasts, etc. The patient's milk usually returns to the breasts, in case the interval is not too long, before the infant is put back to the breasts again. The use of the breast pump will not preserve the patient's milk for any great length of time, and it is better not to use it, as it might lead to the formation of an abscess of the breasts. Aseptic precautions should always be observed, whenever dressing the infant's umbilicus, cleansing the eyes and mouth, so as to prevent infection. The infant should always be kept in an adjoining room, removed from the atmosphere of the mother's room as much as possible.

What precautions should be observed by the nurse in protecting herself on septic cases?

On severe cases two nurses are required for a delirious patient—one for day, and one for night duty—and a special nurse to take care of the infant. Usu-

ally, one nurse takes care of the patient, and one nurse is required for the infant. In either case the nurse on a septic case should insist on six consecutive, undisturbed hours of sleep out of the twenty-four hours, besides two or more hours for recreation in the open air during the sunny part of the day, in order to revivify her own blood and spirits. Whenever the patient's genitals are dressed, the nurse should always wear rubber gloves in order to prevent infection through cracks or abrasions on her hands, such as hang-nails, etc. Above all other things, the nurse should remember *not* to rub her eyes with her hands while on duty, before thoroughly disinfecting them.

How is the soiled bed linen, etc., disinfected?

The sheets, blankets, towels, gowns, etc., used about a septic patient should first be placed in a three per cent. solution of carbolic for several hours, and then sent to the laundry and boiled one-half to one hour. All soiled bed-pads, sponges, dressings, etc., should be wrapped immediately in newspapers and burned in the furnace.

What precaution should be observed in order to limit the septic infection to the patient's room only?

In order to limit the infectious germs, the bath-room should be kept free of all utensils used about the patient, and they should therefore be thoroughly disinfected each time after being used, and kept together, if possible, in the patient's room. The supply table and other furniture used in the patient's room also should be covered with sterile towels; and a sterile gown, towels, soap, etc., should be kept for the physician's use during his visits to the patient's room.

How is the furniture and the room disinfected after a septic case?

Formalin is greatly preferred as a disinfectant, as it does not injure the furniture, bedding, etc. The mattress and comfortables, if any, must all be burned; the bedstead, tables, chairs, and all other furniture should be washed off with soap and water, using a soft piece of gauze, after which they should be finally disinfected with a three per cent. solution of carbolic. All rubber articles, porcelain bed-pan, enamel douche-pan, basins, pitchers, glasses, spoons, etc., should be boiled at least forty minutes or more in a large wash-boiler, and then scoured off and rinsed with boiling water.

Describe the nurse's method of disinfecting herself before leaving a septic case.

The nurse, after superintending the preparations for disinfecting the patient's room, should then change her own clothing, and disinfect the soiled garments in a carbolic solution, before sending them to the laundry to be boiled. Any outer garments that cannot be boiled should be thoroughly disinfected. The nurse should then take a full bichloride bath, usually 1 to 4000, followed with an alcohol sponge-bath, 95%. Her hair should also be shampooed with bichloride, rinsed thoroughly, and rubbed freely with alcohol. This antiseptic bath should be repeated again as soon as the nurse reaches her own home; and she is supposed to allow a week's time to elapse before going to another obstetrical case, after nursing a case of puerperal infection.

What is the average mortality caused by puerperal infection?

The average mortality caused by puerperal infection

in the United States, according to Dr. De Lee, is about 6,000 patients annually.

When, and who first recognized the septic origin, and aseptic measures against puerperal infection?

During the year 1846, Dr. Ignatz Semmelweis discovered the origin of the septic germ causing puerperal fever, and adopted aseptic methods in a measure for the prevention of conveying the germs from one septic patient to another obstetrical patient, while an interne in the Obstetrical Clinic, in the General Hospital of Vienna. Dr. Oliver Wendell Holmes, of Boston, some time previous to the year 1846, also considered puerperal fever "a private pestilence." The theories of both Semmelweis of Europe, and Holmes of America, remained unrecognized by the medical profession until the bacteriologists including Pasteur, Koch, and many others, proved, and have established the present theory of infection from septic germs introduced in the genital tract from without.

Puerperal Insanity

What are the causes of puerperal insanity?

Hereditary predisposition of the patient, in cases of eclampsia, toxemia during pregnancy, and septic postpartum hemorrhage.

What are the symptoms?

The premonitory symptoms of the patient consist of restlessness, headache, insomnia, loss of appetite, refusal of food, delusions of sight, sound, odor, and taste, and loss of affection for her infant, and sometimes for her husband. The patient is liable to become acutely manic at any time, and attempt to jump out of the win-

dow, or she may lie apathetically, and in a melancholy state. But she should not be trusted for a moment, since she may suddenly attempt to injure herself, her child, or the nurse.

Mention three important things to be remembered in the general treatment of puerperal insanity.

1. Prevent the patient from injuring herself, infant, and others.
2. Procure sleep.
3. Keep up patient's nourishment.

Describe the general care of patient with puerperal insanity.

1. Two nurses are absolutely necessary in the care of a patient suffering from puerperal insanity. The patient should be isolated in a room where the windows are barred with wire-netting securely nailed down. Everything with a sharp edge, such as glass, china, scissors, knives, nail-files, mirrors, etc., and all unnecessary pictures and furniture should be removed from the room. The patient must be constantly watched, and she should not be left alone for a moment with the infant, as she may attempt to strangle it. In case she becomes very restless, gentle restraint may prove necessary.

2. Sleep is of the utmost importance, and quiet surroundings are necessary. In order to induce natural sleep, the enema should be given during the evening instead of in the morning, followed by an alcohol rub, general massage, or a warm sponge-bath and a glass of hot milk at bedtime. If these treatments fail to produce sleep, the physician usually prescribes narcotics, such as hyoscin, scopolamin, morphine, chloralamid, etc.

3. Nourishment is of great importance and very dif-

ficult to administer, since the patient loses her appetite, or she may refuse all food from a morbid desire to starve herself. The nurse should see that the food is prepared with great care and skill; and firm, persuasive tact should be exercised in order to induce the patient to take nourishment willingly and without force. The amount of food given daily should be noted, and whenever the patient stubbornly and continuously refuses to eat, gavage is usually resorted to with the aid of the stomach-tube.

The secretions of the patient's breasts usually diminish, and it is much safer and better for the infant's health, *not* to nurse. In most cases of puerperal insanity it proves advisable to remove the patient to a sanitarium, since complete isolation and good nursing are absolutely necessary.

What is the average duration of puerperal insanity?

The average duration is between two and eight months, or sometimes longer. It proves a serious complication in case the mania is prolonged.

Puerperal Thrombosis

What is puerperal thrombosis?

Puerperal thrombosis consists of the formation of clots in the veins of the lower extremities, which interferes with the return circulation of blood, and produces swelling of the limbs.

What is the greatest danger attending thrombosis?

A portion of the clot may break off and be carried in the circulation to the right side of the heart, or it may obstruct the pulmonary artery, and cause instant death.

Describe phlegmasia alba dolens, or milk-leg, and its origin.

It is a peculiar swelling of the lower extremities due to the formation of a clot in the veins. The affected limb becomes swollen, painful, the skin white, tense, and shining from edema, and very tender to the touch. One or both limbs may be affected at the same time. The disease is usually caused from septic infection which extends from the uterus, and travels along the veins and cellular tissue of the pelvis, thence down the legs. Many years ago this complication, therefore, received the name *milk-leg*, physicians believing then that it was caused by a secretion and collection of the patient's milk in the affected limbs. Among the laity to-day the disease is commonly designated as *milk-leg*, although it has no relation whatever to the secretions from the breasts, and may appear also as a complication of typhoid fever or other diseases.

What are the primary symptoms?

Weakness, malaise, insomnia, pain in the brim of the pelvis, constipation, sense of weight, and stiffness of the limb or limbs, followed by swelling. The disease is often ushered in with a chill or a chilly sensation, followed by a rise of temperature, pulse, and respiration.

What is the duration of the disease?

The average duration is usually four to six weeks, and sometimes months.

What is the treatment?

Absolute quiet and rest. The affected limb should be slightly elevated, and warm, moist dressings should be applied and covered with oil-silk, and kept in position

with a many-tailed bandage—since the limb must not be moved any more than absolutely necessary. It should be protected by a cradle, as the pressure of the bed-clothes will result in drop-foot. Milk-leg is sometimes a partial result from general blood poisoning, or pyemia, and as such a complication, it usually proves fatal.

How can a bed-cradle be improvised?

Two chairs should be placed over the swollen limb, with their backs uppermost, and held in position by tying their two legs to the side railings of the bedstead.

Tympanites

What is tympanites?

Distention of the abdomen, due to an accumulation of gas in the stomach or the intestines.

What is the general cause of tympanites?

Defective peristaltic action.

Why is the complication of tympanites often considered serious?

It is a serious complication, since it may be due to peritonitis, and the gas also forces the diaphragm up against the heart, and greatly interferes with its action.

What is the treatment?

The treatment consists of the insertion of the rectal tube, application of turpentine stupes to the abdomen, and carminatives by mouth, or by rectal enema. Asa-fœtida proves a valuable carminative in case of tympanites.

Constipation

What is the treatment for constipation?

In case cathartics and ordinary enemata prove ineffective, high, colonic injections, containing inspissated ox-gall and glycerine, are often ordered. The solution should be injected slowly so as to be retained for several hours, if possible. In case of an impaction of the rectum, the hard mass of fecal matter may sometimes have to be removed with a scoop-like instrument, or with the nurse's fingers.

Describe the removal of a rectal impaction.

The patient should be brought to the edge of the bed and covered well, as the operation is tedious. The nurse should wear rubber gloves, and insert her fingers into the rectum gently, and break up the hard fecal masses. At the same time an intermittent stream of warm, saline solution should be allowed to flow in and out of the rectum. After the rectum has been emptied it should be irrigated with a few ounces of warm, sterile olive oil, or white, sterile vaseline, to allay the irritation.

Describe the preparation of an ox-gall enema.

The preparation consists of mixing one dram of inspissated ox-gall with two ounces of glycerine, so as to form a smooth paste, and add enough water to make *one* quart of solution.

Cystitis

What is cystitis?

Cystitis is an inflammation of the mucous membrane lining the bladder.

What are the causes?

Infection, through lack of aseptic precautions during catheterization; but in some cases injury to the bladder during labor is a predisposing cause. It may also be the result of a cold.

What are the symptoms?

Frequent urination, vesical tenesmus, pus and blood in the urine, pain, and tenderness over the bladder, etc.

Describe the treatment.

The treatment for cystitis is both local and internal. The physician may order urotropine, etc., by mouth, and the local treatment consists of irrigation of the bladder with a saline or some other solution. The preparations for irrigation of the bladder are the same as for catheterization—with the addition of a sterile douche-can—which should be adjusted about eighteen inches above the pubis. Catheterize the patient first, but do not remove the catheter. Expel the air from the tubing of the douche-can by allowing the solution to flow through it, after which attach the tube to the inserted catheter, and allow about eight ounces of the solution to flow into the bladder. Disconnect the tubing, and then allow the fluid to escape from the bladder. Repeat this process until the required amount of solution ordered has been used.

What preparations should be made for cystoscopic examination of the bladder?

The preparations are the same as those for catheterization and irrigation of the bladder, with the addition of a long enameled pan containing the solution in which to place the cystoscope. A pint of sterile water is re-

quired by the physician to distend the bladder while making examinations.

Headache

What are the causes of headache during the puerperium?

Headache during the puerperium is a serious symptom. It may indicate eclampsia, or an anemic condition due to an excessive loss of blood during labor, or it may be the result of insomnia, or weakness of the eyes. In the latter case the patient should wear glasses—if accustomed to them—while in bed. Constipation, exhaustion, worry, nervous excitement, too many visitors, etc., may also produce headache.

Diseases of the Breasts

What is the most common complication of the breasts?

Simple engorgement.

When does engorgement occur?

Engorgement occurs when the secretions of milk come in the patient's breasts, usually on the third or the fourth day after labor.

What are the symptoms?

The breasts become enlarged, heavy, painful, tender, and hot. The portion of the mammary gland running up to the axilla often enlarges to such an extent that the patient cannot bring her arms down on either side. The nipples become flattened, so that the infant cannot easily grasp them in nursing. In case the breasts are irritated by too frequent nursing, or rough massage, etc., engorgement requires a much longer time before it disappears.

What is the treatment?

A binder should be applied firmly to the breasts; saline cathartics are usually ordered, and the patient's liquid diet should be restricted to soft or dry diet. Some physicians prescribe cold applications for the breasts, while others prefer hot applications, such as hot boracic acid compresses of sterile gauze wrung out of a saturated boracic acid solution. The compresses should be covered with oiled silk, and kept in position with a firm, smooth breast-binder. Massage or the breast-pump may also be ordered to relieve engorgement of the breasts.

Describe massage of engorged breasts.

After the nurse sterilizes her hands, bathes the breasts and applies sterile olive oil, or albolene, the massage should be given as follows: First motion consists of taking the breast in both hands, and make firm, even, gentle compression against the chest, which should be continued for about five minutes. Second motion consists of a rotary movement, in which the breast is steadied with one hand, while with the fingers of the other hand circular movements are made over the whole breast, beginning around the nipple and extending toward the outer border. In massaging from the nipple outward, pressure is increased. Third motion consists of steadying the breast in one hand and kneading it with the fingers of the other hand, beginning at the outer border, or periphery of the breast and working toward the nipple. The last motion is the same as the first. In case the massage causes the patient acute pain, it should be discontinued. The physician will therefore order the frequency, and the length of time required, for massage of the breasts.

What must be remembered in the massage of the breasts?

Massage should be given with the utmost gentleness,

since rough manipulations are liable to bruise or injure the delicate mammary glands, and may result in the formation of abscesses.

Mention the various abnormalities of the nipples.

The nipples may be flat, inverted, bifid, or split, and other abnormalities are known as the mulberry and the polypoid nipples.

What should be done to prevent cracks and fissures in the nipples?

The patient's nipples during the latter part of pregnancy should receive special care and treatment to develop them. (See Chapter V.) After labor, the nipples should be kept antiseptically clean, and the infant should not be allowed to bite the nipple, or to sleep with it in its mouth. The nurse should examine the breasts frequently, in order to detect any cracks or blisters about the nipples in their incipency. The patient usually complains of tenderness and pain whenever the infant grasps the nipple, or during the nursing. As soon as a crack is discovered it should be reported to the physician at once. It should be treated without delay, since it may deepen into a fissure, and in case of a transverse fissure, it might result in a partial amputation of the nipple, or in case of a longitudinal fissure it might result in splitting the nipple. Fissures, however slight, therefore, render nursing very difficult, or even impossible, and they are liable to lead to mastitis of the breasts. Great care should be observed, therefore, to prevent the smallest crack or fissure.

What is the treatment?

The treatment for cracks or fissures in the nipples is according to the physician's practice. A few remedies

sometimes used include applications of compound tincture of benzoin, a mixture of equal parts of bismuth subnitrate and castor oil, or of glycerine and boracic acid, etc. A two-per cent. solution of nitrate of silver may be applied to the cracks with a camel's hair brush or a cotton applicator. In case of a deep fissure, a twenty per cent. solution should be applied directly in the fissure.

Nipple-shields should be used in nursing the infant, and it may be necessary to discontinue the regular nursings for twenty-four hours or longer, while applying the two per cent. solution of nitrate of silver to the fissures twice daily. In case the nipple-shield is used, care must be taken to sterilize it twice daily, and keep it in sterile water when not in use.

Describe Wanbrough's lead nipple-shields used in the treatment of cracked and ulcerated nipples.

Wanbrough's lead nipple-shields, according to Dr. De Lee, are successful in curing cracked and ulcerated nipples. These little shields are shaped like a sugar-loaf hat, and should be scoured inside and out, and boiled, after which they are applied to the nipples, supported by a bandage. The theory of the leaden-shield is that the lactic acid in the milk acts on the lead, and the nipple is continuously bathed in a sort of lead water, which serves as an astringent application to the ulcerated cracks and fissures. The pressure of the shield also tends to close the cracks until they heal.

What is mastitis?

An inflammation of the mammary glands, or the surrounding tissues of the breasts, which may appear in different forms from a simple congestion to that of a

suppurative process, which results in the formation of abscesses in the glandular tissue.

Describe the different forms of mastitis.

The inflammation may affect only the skin surrounding the nipple, or a little abscess may form in the tubercles of Montgomery. Glandular mastitis consists of inflammation of one or more lobes of the gland. Phlegmonous mastitis, or periglandular cellulitis, consists of an inflammation of the fat and the loose tissue between the lobes. In the sub-mammary abscesses the infection travels beneath the gland to the connective tissue between the gland and the chest-wall. As the pus forms it may infiltrate itself into the connective tissue, and separate the gland from the chest-wall.

What are the causes of mastitis?

Cracks, fissures, and ulcers of the nipples are predisposing causes through which septic germs may gain access to the glandular tissues, and set up an inflammation. The affection may also originate through lack of aseptic precaution in the care of the nipples, or the patient may also transmit the infection on her fingers to the nipples while nursing the infant. Rough massage, and too frequent use of the breast-pump, may also bruise or injure the tender glands and result in mastitis.

What are the symptoms?

General discomfort of the patient, headache, malaise, hypersensitiveness to light, pain, tenderness and swelling of the breasts, especially in one spot. A chill, or chilly sensation, followed by a rise of temperature to 105° F., or even higher. The affected part of the gland becomes red, hot, tense, hard, and exceedingly painful.

What is the treatment?

As soon as any signs of inflammation appear in the patient's breast the nurse should notify the physician, and apply a breast-binder as firmly as possible, and discontinue nursing the affected breast. The physician usually orders ice applications, and this treatment is usually continued for forty-eight hours. The breasts should first be supported with a binder, and the ice-bags should be placed on the binder, over the affected breast. The bags should be kept about half full of ice, so that they are not too heavy on the tender parts. In case the patient feels chilly, a hot-water bag should be placed at her feet, and her arm on the affected side should be wrapped in warm flannel. During the early stage of mastitis, saline cathartics are usually given, and the patient's liquid diet is restricted as much as possible.

The nurse should not remove the ice-bags until she receives orders from the physician. Usually they remain on the breast continuously until the patient's temperature has remained normal for at least twelve hours. In case there is more than one ice-bag, one bag should be removed at a time, and the other a few hours later. The infant is usually put back to the breasts twenty-four hours after the fever has left the mother, and at least six hours after the last ice-bag has been removed.

As a rule, massage and the breast-pump are not allowed during the treatment of mastitis. In case an abscess forms, the patient has recurring chills, followed by intermittent fever, redness, and softening of the inflamed portion of the breast. An operation may prove necessary, and the nurse should observe the ordinary surgical rules of asepsis in making preparations.

Describe the care of patient following an operation for mastitis.

Suppuration is often prolonged, and there may be a succession of abscesses, and in addition the patient's general health may be affected. The nurse, therefore, should nourish the patient well, and see that she gets plenty of fresh air, etc. After the abscess has been opened, in case the nurse is required to dress the breast, she should always wear rubber gloves in order to prevent infection of the patient's genitals, or the infant's eyes and umbilical cord.

Describe Pier's treatment for congestion of the breast in mastitis.

Pier's treatment for congestion in cases of mastitis is one of the latest methods, and, according to Dr. De Lee, consists of an application of a large dome-shaped glass inverted over the affected breast. The air in the dome is exhausted from it by means of a pump. The bell-shaped glass is usually applied to the breast for intervals of thirty minutes, several times daily. The physician directing the frequency and length of time for the application of the treatment.

What is galactorrhoea?

An excessive flow of milk.

Is it of common occurrence, and what is the treatment?

No, it is of rare occurrence, and the treatment consists of restricting the patient's liquids and all soft diet containing starch. Saline cathartics are ordered to insure daily movements of the bowels, and the infant should nurse regularly with longer intervals between the nursings. In case the patient's clothing becomes soiled

from the constant leakage of milk, the nipples may be protected with absorbent cotton-pads, supported firmly with a breast-binder. The physician sometimes prescribes belladonna and iodide of potassium to check the excessive secretions of milk. These drugs, with some patients, produce peculiar idiosyncrasies, and the nurse should therefore watch for their physiological effects, and discontinue their use as directed.

What is agolactia?

Absence of or deficient secretion of milk.

What are the causes?

The causes may be due to general constitutional weakness, lack of proper nourishment, absence of glandular tissue, malformation of breasts and nipples, worry, shock, etc.

What are the symptoms?

In case the patient continues to nurse the infant after the secretion of milk has diminished, the nursing is attended with pain in the breasts, radiating to the back, and later, during the intervals between the infant's nursings. The infant also loses in weight, cries before and after nursings, and while at the breast it appears to nurse vigorously for a short time, but begins to fret and cry, and finally refuses the nipple. The patient should discontinue nursing the infant, otherwise her health will become broken, and it may result in a serious condition.

What is the treatment?

Increase of the flow of the patient's milk. The physician may prescribe malt extract, somatose, or other tonics. In addition to the patient's regular diet, plenty of water, milk, tea, chocolate, oatmeal and barley gruels, oyster

broth, crabs, etc., should be given between meals. Cool baths, ranging from 80° to 84° F., and massage of the breasts, are sometimes ordered to stimulate the secretions of the breasts.

Describe the massage of the breasts for increasing secretions of milk.

1. Raise the whole breast from the chest-wall by grasping it at its outer border, or periphery, then spread the fingers as wide as possible, and manipulate the breast between the fingers, at the same time drawing the breast toward the median line. 2. Steady the breast with one hand, and with the fingers of the other hand continue the rotary movements all around the outer border of the breast.

Mention some of the conditions in which the infant should not nurse the breasts.

The infant should not be allowed to nurse the breasts during puerperal infection, mastitis, marked anemia, nervous or general febrile affections, heart diseases, tubercular and syphilitic diseases of the patient.

Describe the methods employed for drying up the secretions of the breasts.

In cases where it proves necessary to dry up the secretions of milk, the physician usually orders a breast-binder applied firmly to the patient's breasts; liquid diet is restricted, and saline cathartics are administered. An application of ointment to the breasts may also be ordered—belladonna usually being preferred. Before applying the binder the breasts should be emptied by the infant's nursing, and with the aid of the breast-pump; the breasts should then be washed off with warm water and castile soap and rinsed off with a bichloride solution.

The binder should be adjusted as firm as the patient can endure it, and it should not be disturbed unless another application of the unguent is ordered by the physician.

Describe the requirements of a wet-nurse for the infant.

In case the patient cannot nurse the infant the physician selects a wet-nurse, and sees that she is perfect in health and has an ample supply of nourishing milk. The patient's nurse can do much to make the wet-nurse feel at home. As soon as she arrives she should take a full bath and pump the milk out of her breasts, after which she should rest a few hours before nursing the infant for the first time.

The nurse should see that the wet-nurse takes a daily bath, and that her bowels are not constipated, and that she obtains sufficient sleep and nourishing food such as she is usually accustomed to eat. She should not be allowed foods containing acids or rich pastries, heavy sauces, mayonnaise dressings, highly spiced dishes, etc. The wet-nurse should also be required to perform light work about the house, and take a moderate amount of exercise in the open air during the sunny part of the day.

CHAPTER XIV

COMPLICATIONS OF THE NEW-BORN DURING THE FIRST FEW WEEKS

Mention some of the complications of the new-born during the first few weeks after birth.

Asphyxia, operative injuries, hemorrhages, infections, diseases of the skin, diseases of the respiratory tract, diseases of the digestive organs, diseases of the urinary organs, various complications, and congenital deformities.

Asphyxia

What is asphyxia?

Suspended animation, suffocation, or interrupted respiration. It is a state in which there is a complete suspension of the powers of the body and brain.

What is asphyxia of the new-born called?

Asphyxia neonatorum.

How is asphyxia neonatorum divided?

Into two degrees: 1. Asphyxia livida. 2. Asphyxia pallida.

Describe asphyxia livida.

The new-born's face becomes swollen, the body assumes a dark blue color, and the muscles are somewhat rigid. These symptoms indicate the early stage of asphyxiation, and the infant usually recovers.

Describe asphyxia pallida.

The infant's face assumes a deathlike pallor, the body becomes cold and limp, and the heart beats very faintly or not at all.

What are the causes?

Asphyxia may be caused from too early separation of the placenta from the uterus, or pressure on the infant's brain, or from compression of the cord against the pelvic brim.

What symptoms indicate asphyxia of the infant before delivery?

Irregularity and weakness of the fetal heart-beats, extreme slowness below 100, a rapidity above 175 sustained, and passage of meconium, detected by the physician.

Mention some of the methods adopted for artificial respiration.

Byrd's method, Sylvester's method, and insufflation through a tube, etc.

Describe the treatment for asphyxia neonatorum.

Remove all foreign matter from the infant's trachea, preserve the bodily heat, and as a last resort perform artificial respiration as follows: The physician grasps the infant by the feet, with head downward, and gently slaps the back a few times, after which he inserts one finger into the mouth and removes the mucus and blood from the throat. The infant is usually immersed in a hot bath, 106° F., although many physicians alternately immerse the infant in hot and cold baths. In case these methods fail, the infant should be held by its feet with the forehead resting lightly on a table so that the head

tilts backward. Then grasp the infant's ribs between the thumb and fingers—the thumb placed posteriorly and the fingers placed anteriorly on the chest—after which make a light compression of the chest to force the air out of the lungs. Upon relaxation of the pressure, the chest expands and the air rushes into the lungs. These compressions of the chest should be repeated twenty to thirty times a minute.

As soon as the infant breathes regularly it should be wrapped in a warm, woolen blanket, surrounded with hot-water bags, and placed in an airy room. In case it suffers greatly from shock, the infant may be placed in an incubator for a few hours.

Describe Byrd's method.

Grasp the infant between both hands, so that the right hand supports the head and shoulders and the left hand supports the thighs and the lower portion of the body. 1. Expiration: Elevate the left hand so that the shoulders are lower than the body, then fold the body together so that the knees almost touch the chest, and hold the body in this position for a moment or two. 2. Inspiration: Unfold the infant's body and extend it backward as far as possible, and slightly raise the shoulders. These motions should be repeated about twelve times a minute.

Describe Sylvester's method.

The infant should first be placed on its back upon a pillow adjusted conveniently on a table, and covered up warmly. Then stand above the infant's head, and grasp both of its arms as near the elbow as possible. 1. Expiration: Bring the infant's arms over the chest so that the hands meet, and then press the elbows firmly against the sides of the body in order to force the air out of the

lungs. 2. Inspiration: Slowly extend the infant's arms above the head, and then pull them gently until the chest becomes fully expanded, then bring the arms down to the sides of the body and press the elbows firmly against the chest as before. These movements should be repeated about fifteen times a minute.

Describe insufflation through a tube.

A tube is inserted into the infant's trachea, and air is blown direct into the lungs. Oxygen also has been used successfully in case of asphyxia.

What must be remembered in the care of an infant after revival from asphyxia?

The nurse should watch for symptoms of a secondary attack of asphyxia, which is liable to develop, due to atelectasis pulmonum. The symptoms are cyanosis, and a peculiar grunt or moan of the infant. The nurse should also note symptoms of cerebral irritation, if any, as hemorrhage of the brain may also occur. Both secondary asphyxia and hemorrhage of the brain usually prove fatal.

Operative Injuries

What is caput succedaneum?

A dropsical swelling which appears on the presenting part of the infant's head during labor, due to pressure and venous congestion. The swelling appears largest immediately following birth, but it usually disappears in one or two days.

What is cephalhematoma?

A blood tumor—an effusion of blood on the cranium of the new-born, situated between the pericranium and the bone. It is characterized by a soft, round, fluctuat-

ing, painless swelling, which may appear on either side of the head a day or so after birth. It may remain for weeks, or even months, but it is gradually absorbed in time, without special treatment.

Is cephalhematoma of frequent occurrence?

No, it is not of common occurrence, and, according to Dr. Wright, it appears once in about two hundred cases of labor.

Mention some of the serious injuries caused by pressure-marks of the forceps during delivery.

Depressions of the infant's skull, fractured skull, broken bones, injuries to the eyes, muscles, and nerves.

Describe the depressions of the infant's skull, causes and symptoms.

The depressions are cup- or furrow-shaped, and generally appear on the anterior part of the parietal bones, or on the frontal bones. They are frequently caused by pressure of the bony promontory of the sacrum, or some other bony prominence pressing against the infant's head during delivery, and infrequently from pressure marks of the forceps blade during operative delivery. The symptoms of depressions of the infant's skull are indicated by cyanosis and convulsions, which usually result fatally in a few days after birth. In all cases of slight depression of the skull, therefore, the infant requires immediate surgical treatment. Such injuries incurred at birth are liable to result in nervous headaches, epilepsy, imbecility, or insanity in later life of the child.

Does fractured skull of the infant occur frequently?

No, it occurs occasionally during artificial delivery, especially in cases where the skull has been previously

depressed by some bony prominence against the head. In such cases hemorrhage results from injuries to the brain, and the infant dies.

Are fractured bones of the limbs of frequent occurrence?

Yes, frequently the long bones, including the femur, clavicle, and humerus are fractured during delivery, and sometimes they are broken in the uterus, from injuries received before labor.

What are the duties of the nurse in case of fractured bones of the new-born?

The general treatment of fractured bones consist of application of plaster casts, or splints, to the injured limbs, etc. After the physician applies the dressings, bandages, splints, etc., the nurse's duties consist of renewing dressings, bandages, and in keeping the splints in position on the fractured parts. She should see that all discharges of vomit, urine, defecations, etc., do not come in contact with the injured bones, and she should also observe the bandage frequently, to see that it is not too tight, which would be indicated by a swelling below the bandage.

When and how are the infant's eyes injured during delivery?

The infant's eyes are sometimes injured during high, or mid-forceps delivery, by one blade of the forceps pressing too near or directly over the eyes. This may destroy the eyes, although such accidents seldom occur. The eyes are sometimes seriously injured by pressure from the bony promontory of the sacrum, especially during delivery through flat, deformed pelves.

Describe muscular injuries received at birth.

Muscular injuries sometimes occur, especially to the sterno-cleido-mastoid muscles, which result in hemorrhage, followed by the formation of a hard lump known as hematoma, a few days after birth. The lump is usually absorbed, and disappears in a few weeks.

What is the cause of facial paralysis in the new-born?

Facial paralysis is more common in cases of face presentation of infants, and is the result of pressure of the forceps-blade against the seventh nerve.

What is the duration of facial paralysis?

Although the infant's face may be greatly distorted and swollen, improvement usually occurs in a few hours after birth, and the paralysis entirely disappears in about a week.

Does injury to the brachial plexus muscles occur often?

No, it is of rare occurrence, and results from the dislocation of the head of the humerus.

Does paralysis of the arms occur often?

No, it is infrequent, although a rare form, known as Duchenne's paralysis, sometimes affects the deltoid, biceps, and the supinator longus muscles of the arms.

Describe the complications caused by minor pressure marks of the forceps during delivery.

The minor pressure-marks made by the forceps blade on the infant's head, or body, usually crust over, and the bruises heal readily underneath the skin, unless the deeper muscles or the bone are involved. In case the bone is injured, inflammation and suppuration result, and a small sliver of bone is discharged and the wound heals.

Describe the treatment of pressure-marks, or abrasions of the skin.

All pressure-marks, bruises, and abrasions of the skin should be treated with aseptic care, as in any minor surgical abrasion. The affected parts should be cleansed with weak antiseptic solution, since the new-born is liable to absorb chemical poisons from the application of too strong solutions, etc.

Hemorrhage of the New-born.

What is hemophilia?

It is an hereditary disease, characterized by a tendency to bleed excessively from the slightest wound, such as a scratch from a pin, etc., or spontaneously.

What is the cause of a primary hemorrhage of the umbilicus?

It is usually caused by insufficient ligation, slipping, or loosening of the ligature, etc.

What are the causes of a secondary hemorrhage of the umbilicus?

Very little is definitely known about the causes of a secondary hemorrhage, although it is believed to result from hemophilia and from congenital syphilis. It is characterized by a persistent oozing of blood from the base of the umbilical cord, and occurs at the time the separation of the cord takes place, usually between the fifth and the fifteenth day after birth.

What should be done in case of hemorrhage of the umbilicus?

The physician should be notified at once, and the nurse

should apply a sterile compress to the bleeding surface of the umbilicus and adjust a binder firmly.

What is melæna neonatorum?

A general disease of the new-born characterized by hemorrhage of the bowels.

What is hematemesis?

It consists of vomiting blood.

What is a hemorrhage of the mucous membranes, and the skin called?

Purpura hemorrhagica.

Infections of the New-born.

What is ophthalmia neonatorum?

An inflammation of the mucous membrane of the eyes of the new-born, characterized by a profuse purulent discharge.

What is the cause?

It is caused frequently by gonorrheal infection from gonococcus germs during delivery.

How do the germs gain access to the mucous membrane of the eyes?

The eyes are infected from the vaginal discharge during delivery, or from the physician's or the nurse's hands while cleansing the infant's eyes after birth, or from the infant's hands—which are covered with mucus—should they come in contact with the eyes before they are cleansed, etc.

How soon does infection appear in the eyes after birth?

The infection usually appears between the second and the fifth day after delivery.

What are the symptoms of ophthalmia neonatorum?

The infant's eyelids at first become red, followed by a watery discharge, containing yellowish flakes, and within twenty-four hours they become so swollen that the eyes are closed, followed by a purulent discharge. Unless immediate treatment is given to the eyes, the inflammation gains rapid headway, the conjunctiva becomes ulcerated, and the eyes may be destroyed, and the sight lost.

What is the average number of cases of blindness resulting from congenital infection of the eyes of the new-born?

Infection of the eyes of the new-born occurs more commonly among the poorer classes, and according to Dr. McCombs, ophthalmia neonatorum causes about sixty per cent. of the congenital blindness in the United States.

What should be done to prevent infection of the infant's eyes?

In case the patient has a suspicious vaginal discharge, the physician usually orders an antiseptic vaginal douche several times during labor. As soon as the infant's head is born, the eyes should be thoroughly cleansed with warm sterile water, followed later by Crede's method, which consists of dropping one or two drops of a two per cent. solution of silver nitrate in each eye, neutralized by a few drops of normal salt solution. Protargol, ten per cent., or argyrol, fifteen per cent., are sometimes used instead of Crede's method.

Describe the general treatment for ophthalmia neonatorum.

The infant should be isolated in a room properly ventilated, having an uniform temperature and a subdued light. The treatment consists of nutritious and assimilable food, frequent sponge-baths, and local cold or hot compresses applied to the infected eye or eyes, as directed by the physician. In case only one eye is infected, the other eye should be protected with an eye-shield, or with a compress of sterile, absorbent cotton held in position with a strip of adhesive plaster. It should also be examined three or four times daily for any signs of infection.

Describe the local treatment of infected eyes.

Local treatment includes irrigations and the application of cold or hot compresses, as directed, to the eyelids. The infant should be placed on a pillow, preferably on a table, covered warmly, with a hot water-bag at its feet. The arms should be restrained at the sides so that they are not allowed to come in contact with the eyes at any time. A sterile basin should be placed on a table, or on a chair, near the infant's pillow, in which should be placed a large piece of ice which has been rinsed off with sterile water. A large supply of sterile cotton sponges, about the size of five-cent pieces, should then be made, immersed in sterile water and placed on the ice to cool. The compresses should be applied to the eyelids and changed, usually every two minutes. The soiled compresses must be thrown away at once, in a paper bag or dressing-pail close at hand, and they should be burned at least twice daily. Application of the compresses may be ordered continuously for twenty-four hours.

The greatest complication during infection of the eyes

arises from the acid secretion of the eyelids eroding the cornea, which is liable to destroy the infant's sight. The purulent, acid secretions, therefore, are gently removed from the eyes by irrigations of warm sterile water, about 70° F. The solution should be adjusted in a sterile douche-bag having a long rubber tubing, with a beveled-edged eye-dropper for a nozzle.

Describe the irrigations for infected eyes.

The infant should be turned on the side of the affected eye to be irrigated first. A rubber draining-sheet should be placed under the infant's head, adjusted so that the solution flows into a slop-jar. The douche-bag containing the solution should be hung about twenty inches above the infant's eyes. At first it should be allowed to run through the tubing, after which the point of the eye-dropper should be directed toward the inner corner of the eye, and a gentle stream allowed to flush, and irrigate the eye thoroughly. Usually the nurse is required to separate the eyelids with her fingers, using a sterile gauze, so that the solution may flow freely into the eye, and flush out every particle of pus which collects underneath the lids, from the inner corner of the lid outward. As soon as this is completed the lids should be wiped off with a sterile cotton sponge. The physician may order Crede's method applied to the eyes after the irrigation, which consists of dropping one or two drops of a two per cent. solution of silver nitrate in each eye. Protargol, ten per cent., or argyrol, fifteen per cent., is sometimes prescribed instead of Crede's silver nitrate method.

What should the nurse in charge of a case of ophthalmia neonatorum remember?

That the faithful and unremitting care in following

the physician's orders must be adhered to strictly, in order to preserve the light of day for the infant suffering from the infection. The disease is highly infectious, and there is great danger of the nurse conveying the septic gonococcus germs to others, or infecting her own eyes, through the slightest carelessness. In order to protect herself, she should avoid touching her face, eyes, or hair while on duty before first sterilizing her hands thoroughly in a five per cent. solution of lysol, etc. She must observe the utmost care while irrigating the infant's eyes, so as not to spatter any of the solution in her own eyes, or on her uniform, etc.

Describe the symptoms of infection of the infant's umbilicus.

The skin around the umbilicus, or the navel, becomes red, swollen, and at the insertion of the cord the surface assumes an unhealthy appearance, frequently becoming purulent, with a fetid odor, followed by a rise of temperature to 103° F. In severe cases the umbilicus is liable to ulcerate, and the inflammation may extend over the abdomen; the infection may travel along the blood-vessels and enter the abdominal wall, and later involve the liver. This results in pyemia, or general blood poison. All symptoms of inflammation of the umbilicus should be reported to the physician immediately.

What is the treatment?

A small incision is usually made in the inflamed part, near the umbilical cord, by the physician, and moist, antiseptic dressings, such as alcohol 50%, are sometimes ordered over the parts. In case the cord becomes moist and has an offensive odor, the stump of the cord is painted with iodine, or a moist alcohol compress is

ordered every eight hours. The cord is dressed as usual. Antiseptic powders, such as iodoform, salicylic acid, aristol, etc., are often prescribed for dressing the umbilical cord.

Describe vulvitis, and vaginitis, their causes, etc.

Vulvitis consists of an inflammation of the vulva; and vaginitis is characterized by redness, heat, and swelling of the vagina, usually accompanied with a yellowish discharge. The causes are the result of catarrhal or gonorrheal affections.

Diseases of the Skin

What is jaundice?

A yellowish discoloration of the skin.

What is jaundice in the new-born called?

Icterus neonatorum.

When does it appear, and what is the cause?

Jaundice, or icterus neonatorum, usually appears between the third and sixth day after birth, either in a mild or a severe form. In mild cases the skin usually clears up in a few days, and the infant's health is not affected; but in severe cases the skin of the infant's whole body becomes very yellow, even the whites of the eyes are icteric, and the secretions are yellow, and the general health is affected. The infant becomes puny, gains slowly in weight; the bowels are usually inactive, due to the sluggish condition of the liver, etc. The cause of jaundice is chiefly theoretic, but it is believed to be the result of disorganization of the blood, inefficiency of the liver, which results in an accumulation of

bile in the blood, or septic infection through the blood-vessels from an infected umbilicus.

What is the treatment?

The infant should be well nourished, and the excretions of bile should be stimulated by the aid of diuretics acting on the kidneys, and the secretions of the skin and the bowels should be flushed with rectal irrigations to aid in washing the poison from the system.

What are vesicular eruptions?

They consist of tiny water-blisters, which rise upon a red base on the skin known as red-gum. They appear on the infant's forehead, neck, and in the folds of the body. Prickly-heat is similar to vesicular eruptions, but appears in a more aggravated form with inflammation spread around the vesicles.

What is the scientific name for vesicular eruptions?

Strophulus.

What is intertrigo?

It consists of chafing of the skin in the moist places of the infant's body, such as the axilla, vulva, and buttocks, characterized by watery exudations.

What is the treatment for vesicular eruptions, and intertrigo?

The treatment for vesicular eruptions consists of bathing the infant's body with plain warm water without soap, thoroughly drying the body without friction, and applying stearate of zinc, rice, or starch powders to the affected parts. Boracic acid powder should not be used, since its natural moisture irritates the skin. The in-

fant's clothing should be non-irritating, and of light weight.

The treatment of intertrigo is the same as for vesicular eruptions. The affected folds of the body should be kept separated with a thin layer of absorbent cotton and changed frequently. In case water irritates the chafed parts it should be discontinued at once, and pure olive oil should be used as an unguent. A soothing ointment may be made of equal parts of stearate of zinc powder and castor oil. The physician usually prescribes some ointment to allay the inflammation and heal the eruptions. All eruptions on the infant's skin should be noted on the nurse's record-sheet.

Diseases of the Respiratory Tract

What are the causes of snuffles, or coryza in the newborn?

Snuffles, or coryza, are caused from a cold in the infant's head, due to an acute congestion of the mucous membrane of the nostrils; or sometimes they are the result of a constitutional taint, and should therefore be reported to the physician at once.

What is the treatment?

Keep the infant warm, and apply warm, sterile white vaseline, or pure olive oil inside the nostrils, with a cotton applicator, and rub the bridge of the nose with camphorated oil. These applications usually relieve the congestion.

What is bronchitis, its cause, and its symptoms?

It is an inflammation of the mucous membrane of the bronchial tubes, usually caused from exposure to cold,

or by aspirating infectious vaginal secretions during delivery, and is a serious complication of the new-born. It is characterized by a rise of temperature from 100° to 102° F., increased pulse and respiration, accompanied with a tight, hard cough, which becomes loose later.

Why is bronchitis a serious complication in the new-born?

The inflammation of the mucous membrane of the bronchial tubes in the new-born has a tendency to extend into the smaller bronchi, and verge on pneumonia.

What is the treatment?

Good nursing of the infant is most essential. The room should have a warm, moist, even temperature, properly ventilated with fresh air. The infant's position should be changed frequently so as to prevent stagnation of the blood in the lungs. The food should consist of mother's milk if possible. The physician may order carbonate of ammonia, and other stimulants by mouth, and oxygen is frequently given. The bodily temperature is usually reduced by cool packs, or cool sponge baths.

How should cool packs be given to the new-born?

The infant's bed should be protected with a rubber sheet, and the pack may be given as follows: After wringing a soft napkin out of water between 85° to 90° F., loosely wrap it around the infant's chest, and protect it with soft flannel and a towel. The pack is usually left on the chest for about two hours. The physician specifies the temperature of water, frequency, and length of time for the pack to remain, etc.

What does cyanosis indicate, and what is its cause, etc.?

It indicates imperfect oxygenation of the blood. The infant's body, especially the face and extremities, becomes a dusky, bluish, or purplish hue, and the hands and feet become cold. Cyanosis is caused by congenital malformations of the heart, such as valvular diseases, etc., and it proves fatal in most cases although the child may survive for several years.

What is a cyanotic infant commonly called?

A "blue-baby."

What is atelectasis, its cause and symptoms?

It consists of an absence of air in portions of the lungs of the new-born due to collapse of the air-vesicles. The air-cells, not fully expanded with air at birth, collapse, and this prevents the air gaining access to those portions not expanded. The symptoms of atelectasis includes cyanotic attacks, and a characteristic whining cry of the infant, and peculiar grunt, or groan, accompanying each expiration. The complication usually proves fatal.

What infants appear predisposed to atelectasis?

Those infants having a low vitality—especially prematurely born infants—since their lungs have a tendency not to expand sufficiently, due to their feeble efforts in breathing.

What is the treatment?

The infant should receive plenty of nourishing and assimilable food; it should be induced to cry vigorously once or twice a day in order to develop the expansion of the collapsed air-vesicles, and it should be kept warm in a properly ventilated room. In case of cyanotic at-

tacks, or collapse of the infant, the physician usually orders inhalations of oxygen, hot-baths, stimulations, such as a little coffee, or a drop or two of brandy, and as a last resort, artificial respiration.

Diseases of the Digestive Organs

What are the causes of indigestion?

Improper food, too frequent and irregular hours for nursing, allowing the infant to nurse too rapidly and too much, and exposure to cold. Indigestion is more common with bottle-fed, than with nursing infants.

What are the symptoms?

The infant becomes restless, suffers from pain, colic, vomiting, diarrhoea, and expulsion of gas both by rectum and by mouth. The defecations are green, acidulous, foamy, and contain mucus, and undigested curds of milk.

What is the treatment?

The causes of indigestion should first be avoided or removed. The physician usually orders administration of castor oil, fifteen drops; the nourishment should be restricted to barley or rice-water, instead of milk, and pepsin, or other medications may be prescribed.

What is intestinal colic, and its causes?

It is a spasmodic intestinal pain, and may be a symptom of indigestion; it is caused by improper food, over-feeding, constipation, flatulence, and exposure of the infant to cold.

What are the symptoms?

The symptoms consist of a characteristic sharp, con-

tinuous cry, throwing about of infant's legs, twisting of the body, and tenseness of the abdomen.

What is the treatment?

The infant should be given plain, boiled water, as hot as possible, and a few drops of essence of peppermint may be added to expel gas; the infant to be kept warm, by placing a hot water-bag at its feet. The physician usually orders a saline injection, and sometimes gastric lavage is ordered; the diet is regulated, and cathartics, such as castor oil, calomel, or aromatics are given.

What causes render it difficult for the infant to nurse?

Ignorance of the new-born, tongue-tie, harelip, cleft-palate, thrush, Bednar's aphthæ; diseases of the brain, and of the lungs, such as bronchitis, pneumonia, etc., and depressed, or too small nipples, deficiency of, or unpleasantly flavored milk, etc.

How can depressed nipples be drawn outward?

The nipples can be drawn outward by the application of a heated bottle over them. The bottle should be filled with boiling water, and after a few seconds poured out, and the bottle placed quickly over the nipple.

What does vomiting indicate?

It is a symptom indicative of many diseases, chiefly indigestion and gastro-enteritis. In case vomiting is persistent, accompanied with nausea, and quantities of sour, offensive curds of milk, the infant is undoubtedly suffering from indigestion. But in case the infant vomits blood or bile it is a serious symptom, and should be reported to the physician at once. Vomiting should not be confused with regurgitation—which often occurs immediately after nursing, and is caused by overfilling of

the stomach, or tossing the infant about too much after nursing.

What are the causes of constipation?

Insufficient food, habit, and lack of water to drink. The infant's bowels during the first day after birth may be obstructed by tough mucus which has accumulated in the rectum, and after it is removed the bowels move normally. Infrequently the anus is closed or even absent; this is a serious condition, and should be reported to the physician immediately, as an operation is required to open the orifice.

What is the treatment?

Regulation of the infant's diet. Cathartics should be given to the patient—in case the infant nurses—so as to act as a laxative for the infant's bowels through the milk. Castor oil, or other laxatives, may also be given to the infant. After the cord has come off, and the umbilicus has healed, a light massage is sometimes ordered for the abdomen.

What are the causes of diarrhœa?

The physiological cause is due to indigestion of the colostrum, which evidently is Nature's object to get rid of the meconium found in the infant's bowels at birth, as soon as possible. Diarrhœa may also result from milk that is too rich in fats, or proteids, or from the effects of laxatives administered to the mother, etc.

What do green stools of the infant indicate?

Green, slimy, frothy stools, which contain undigested curds of milk, indicate indigestion. In case they also have a sharp, strong, acidulous odor, accompanied by fever, they indicate inflammation of the gastro-intestinal

tract, in which case the anal region becomes eroded, and sometimes ulcerated. This condition appears more common with bottle-fed, than with nursing infants.

What is melæna neonatorum?

It is a condition in which the stools appear dark—almost black, and are mingled with blood. This indicates a hemorrhage high up in the bowel, and it is a serious symptom, and should be reported to the physician at once.

What is inanition fever, its causes, and treatment?

Inanition fever is a term applied to a peculiar elevation of the temperature of the new-born during the first few days after birth. It sometimes suddenly rises to 103° F., or higher, and is associated with a rapid loss of weight. In severe cases cerebral symptoms develop, and sometimes convulsions occur, which should be reported to the physician at once. The causes are apparently due to wasting of the body through lack of nourishment of the infant. The treatment consists of administration of fifteen drops of castor oil, rectal irrigations of saline solution, and cool baths for the reduction of the fever. In case of cerebral symptoms, ice applications should be made to the head as directed.

What is parasitis stomatitis?

An affection of the mucous membrane of the mouth of the new-born due to a fungus growth, characterized by white spots on the tongue, gums, and cheeks, the removal of which leaves a raw surface. In severe cases the spots spread along the mucous membrane down the throat, to the stomach, and sometimes inflame the entire alimentary canal. This condition may result in the infant's death.

What is the common name for parasitis stomatitis?

Thrush, or sprue.

What infants are specially predisposed to the disease?

Weak, sickly, and especially premature infants.

What are the predisposing causes for parasitis stomatitis?

Improper care of the infant's mouth, unsterile, or dirty feeding-bottles, and the introduction of soiled nipples in the mouth, etc.

What is the treatment?

The chief treatment consists in keeping the infant's mouth clean. It should be cleansed with sterile water before and after each feeding, and the feeding-bottles, nipples, etc., should be sterilized each time used. The physician sometimes applies a two per cent. solution of nitrate of silver daily to the inflamed parts of the infant's mouth, followed by two drops of castor oil, to allay irritation.

What is Bednar's aphthæ, its causes and treatment?

It consists of shallow ulcers on the mucous membrane in the back part of the infant's mouth, due to undue force in cleansing the mouth, or to badly shaped, or too long rubber nipples. The physician usually applies a two per cent. solution of nitrate of silver to the ulcers.

What is marasmus?

It is an extreme form of malnutrition in which the infant is not able to digest and assimilate food. It may occur without any apparent constitutional or local disease.

What are the symptoms?

Rapid loss of weight, until the infant's body appears merely skin and bones; loss of appetite, indigestion, anemia, and a subnormal temperature.

What are the important things to be remembered in nursing marasmus infants?

The infant must be kept warm and clean, and the food should be carefully prepared and administered slowly. The pulse, respiration, and temperature should be taken at least twice a day, and the character of stools, vomit, etc., and the entire condition and treatment of the child should be noted on the record-sheet.

*Diseases of the Urinary Tract***What may cause delayed urination of the new-born?**

Urination may be delayed by fever, jaundice, or sometimes by an organic obstruction in the urinary passage. It occurs more commonly in infants delivered by forceps.

What is the treatment?

The infant should be given plenty of sterile water to drink, and warm, moist compresses should be applied to the region of the bladder, and a warm sitz-bath is often effective. The physician may order some diuretic—such as sweet spirits of niter, etc. In case these methods fail, the physician often introduces a rubber catheter in order to ascertain whether the urinary passage is obstructed or not.

What is lithuria?

It is an excess of uric acid, or urates, deposited in the kidneys. The urine becomes heavy, dark colored, leav-

ing a characteristic brick-red deposit on the infant's nappkins. A free flow of urine washes the uric acid out of the system.

What is phimosiis?

A contraction of the foreskin so that it cannot be retracted. Adhesion between the glans penis and the foreskin, or prepuce, is of more frequent occurrence than contraction of the foreskin. These conditions give the infant acute pain and cause difficult urination, and they are serious complications, as the foreskin cannot be retracted, and the secretions decompose underneath, resulting in inflammation of the parts. The physician may dilate the preputial opening, or perform circumcision.

What is inflammation of the glans penis called?

Balanitis.

Describe dilatation of the prepuce, or foreskin.

The physician, with the aid of a small pair of forceps, dilates the prepuce, and gently pushes it back behind the gland, although it sometimes proves necessary to first incise the edge of the foreskin before it can be pushed back. After the first retraction the nurse is required to carry out the procedure daily as follows: Push back the foreskin toward the pubis so as to expose the entire gland; cleanse the parts, and remove the smegma with white, sterile vaseline, and then bring the foreskin forward over the gland.

What is understood by circumcision?

It consists of an operation in which a portion of the prepuce, or foreskin, is removed.

How soon after birth is circumcision performed by orthodox Jewish families?

Circumcision is usually performed on the eighth day after the birth of an infant, by orthodox Jews.

Describe preparations, instruments, etc., for circumcision.

The preparations are the same as for any minor operation, including a supply of hot and cold sterile water, towels, sponges, solutions, etc. The instruments required include a pair of scissors, rat-toothed forceps, and a few artery clamps. It is advisable to have a little pulverized alum near at hand in case of a hemorrhage. Stitches may or may not be taken. The infant is usually placed on its back with the thighs flexed. The nurse's duty during the operation consists in holding the legs and keeping the infant covered. In case the operation is performed by a physician, chloroform is generally used, although the Mohel's anesthetic of brandy-water is sometimes employed.

Describe the Mohel's anesthetic used during circumcision.

The Mohel's anesthetic consists of a solution made of one part of brandy or whiskey, and four parts of sterile water, that is, one dram of brandy added to four drams of water, with a little sugar added. A small piece of cake is then wrapped in linen, and tied with white cotton, so as to resemble a large nipple. It is soaked in the brandy water and usually inserted in the infant's mouth a few minutes before and during the operation. It usually proves effective and the infant sleeps for a few hours following the circumcision.

Describe the care of the infant after circumcision.

The nurse should watch for symptoms of a secondary hemorrhage and dress the wound as directed. She should first sterilize her hands and remove the soiled dressings by soaking them off gently with sterile water so as to prevent any threads of gauze adhering to the parts. The treatment during the first two days usually consists of moist dressings saturated in a one per cent. solution of boracic acid, and later an application of white, sterile vaseline to the wound as directed. The napkins should be adjusted so that there is no compression on the tender parts.

What should be done in case of a secondary hemorrhage?

The nurse should notify the physician at once, and meanwhile apply pulverized alum as an astringent to the bleeding part of the wound, and bandage the parts firmly with a sterile gauze bandage.

How long does the wound require to heal after circumcision?

Three to seven days.

*Various Complications***Describe engorgement of the breasts.**

During the first week after birth the infant's breasts may become enlarged, also painful, tense, and inflamed, due to engorgement of the milk secretions in the breasts, which usually disappears without treatment.

What is the treatment?

The nurse should gently bathe and anoint the inflamed breasts with camphorated oil, apply absorbent cotton

and a breast-binder—which should not be removed for a few days.

Why should the inflamed breasts not be massaged?

The inflamed breasts should not be massaged or squeezed, since it might injure the delicate glands and result in an abscess.

Is menstruation common in the new-born?

No, it occurs on an average of one in fifty cases of female infants delivered, and is characterized by a slight vaginal discharge of blood on the napkin. It seldom signifies anything important pathologically, although it should be reported to the physician at once since it might signify some specific symptom.

What causes delayed separation of the umbilical cord?

Separation of the umbilical cord is delayed in case it is large and thick, or in cases where a hemorrhage about the base of the umbilical cord has occurred, followed by infection. Weak, puny infants are predisposed to delayed separation of the cord.

What can be done to hasten the separation of the cord?

A compress of cotton saturated with alcohol, 95%, may be applied around the base of the umbilical cord, or an application of a two per cent. solution of silver nitrate to the stump of the umbilical cord, and about the base. Powders, such as aristol, dry, pulverized alum, corn-starch, etc., hasten absorption of moisture.

Describe umbilical vegetations.

Vegetations or granulations sometimes appear after the separation of the cord, characterized by little tubercles varying from a pin's-head to a large pea in size.

The physician usually cauterizes the tubercles with silver nitrate—*lunar caustic*—or they are sometimes ligated, and cut off.

Is umbilical hernia common, and what is the treatment?

Yes, it frequently occurs due to imperfections of the abdominal wall, in the region of the umbilicus, and it is usually cured spontaneously without special treatment. In order to hasten recovery, application of a two inch strip of adhesive plaster may be placed transversely on the abdomen so as to hold the umbilicus firmly together from the sides.

What is a convulsion?

It is a condition in which there are excessive muscular contractions—either tonic, or clonic—dependent upon the involuntary discharge of the motor impulses from the nerve centers. The convulsions may be general or local, the latter are sometimes called spasms, and fits.

What is the difference between tonic and clonic convulsions?

Tonic convulsions consist of continuous contractions of the muscles, and clonic convulsions are intermittent contractions of the muscles, therefore commonly called spasms.

What are the causes of convulsions in infants?

The new-born during the first few weeks may have clonic convulsions, or spasms, due to cerebral injuries received during delivery, such as fractured skull and hemorrhage of the brain, cerebro-spinal meningitis, atelectasis pulmonum, tetanus, and disorders of the alimentary tract, etc.

What are the premonitory symptoms of convulsions?

Involuntary twitchings of the muscles of the eyes, face, and extremities, stiffness of the jaw, body, and extremities. These symptoms do not always precede convulsions, as they sometimes occur suddenly without premonition.

What should be done to relieve convulsions during the absence of the physician?

The physician should be notified at once, and the nurse should immerse the convulsed infant in a hot mustard bath, about 110° F., for five minutes, and after the bath it should be wrapped in a warm blanket and given a saline enema to flush the bowels.

What is tetanus?

An acute, infectious disease caused by tetanus bacillus.

How does the bacillus enter the body?

Through wounds, or abrasions of the skin. In the new-born the bacillus enters the system through infection of the umbilicus.

What are the symptoms of tetanus?

Fretfulness and disinclination of the infant to nurse, a peculiar grinning expression of the face, an increasing rigidity of the muscles of the neck and the lower jaw, which by degrees soon extends to the trunk and extremities, until the whole body becomes stiff, the head thrown backward, and the spine arched backward, in an opisthotonos position. In case the infant's head and body arch forward the position is said to be emprostotonus.

What is the treatment?

Very little can be done to relieve the muscular rigidity; the physician usually administers an injection of antitetanus serum into the infant's body. Tetanus, sometimes called lock-jaw, usually proves fatal to the new-born.

*Congenital Deformities***What should be remembered in case a deformed infant, or a monster is delivered?**

The nurse should not allow the patient to see the infant or monster, or even know that she has given birth to an imperfectly formed child.

What is spina bifida?

It consists of a soft, fluctuating tumor, filled with cerebro-spinal fluid, usually located on the lower part of the spine. It is caused by the absence of one or more of the vertebral arches, which allows the membranes that cover the spinal cord to bulge outward and form a tumor. It is considered a very serious condition, although not necessarily fatal.

What is a harelip?

It consists of one or two congenital slits on the upper lip of the new-born.

What is a cleft-palate?

It is a congenital slit in the roof of the mouth which results in the nose and mouth forming one cavity.

What should be remembered in nursing an infant with a harelip, or a cleft-palate?

Elevate the infant in a partly sitting position in order to prevent the milk, mucus, etc., accumulating in the

throat, which might result in pneumonia. Children with these congenital deformities cannot nurse as they are powerless to form a suction, or create a vacuum, and the milk is therefore liable to return through the nostrils. These infants should be held in an upright position while administering milk or water, which is usually given with a medicine-dropper at first. The physician, in case of malformations of the infant's mouth, provides specially made nipples with broad flaps of rubber on their upper surfaces. The flap fills the slit in the roof of the mouth and makes it possible for the infant to nurse. The newborn is sometimes fed by gavage until it becomes strong enough to have an operation performed.

What is tongue-tie?

It consists of an immobility of the infant's tongue. The tip of the tongue is attached to the floor of the mouth by a thin band called the frenum. Tongue-tie results from the frenum being too short, or it may be too far forward. This sometimes interferes with the infant's nursing freely. The tongue should be examined, and in case of tongue-tie it should be reported to the physician, who usually performs a slight operation, in which he cuts the thin anterior transparent portion of the frenum, thus allowing greater freedom of movement of the tongue.

What is congenital atresia of the anus?

It is an absence of the external opening of the rectum. The nurse at once discovers occlusion of the anus when she attempts to take the infant's temperature. It is a serious complication, since the bowels cannot move. The physician should be notified at once, as occlusion of the anus proves fatal unless an operation is performed im-

mediately. Sometimes the bowel is also occluded higher up, and in such a case a laparotomy may be performed.

What is congenital club-foot?

It consists of a turning of the infant's foot, or feet, in the wrong direction.

What is polydactyle?

It consists of an infant born with more than five fingers and sometimes with supernumerary toes. The physician usually removes the supernumerary fingers or toes a few weeks after birth of the infant.

CHAPTER XV

CARE OF PREMATURE INFANTS

What is a premature infant?

An infant is considered premature when delivered between the time it is viable and before the end of normal pregnancy.

What are the characteristics of the early premature-born infant.

The infant is small, and generally weighs two to five pounds, the skin is red and thin, the blood-vessels are easily visible, and the body is partly covered with a fine, downy hair known as lanugo, and the finger-nails do not extend to the tips of the fingers. The bowels are sluggish, the urine scant, and jaundice usually develops a few days after birth; the temperature has a tendency to remain sub-normal and irregular; the infant sometimes remains in a peculiar stupor, and has a characteristic cry or whine. The initial loss in weight is greater than that of the normal infant, and it usually requires twenty to thirty days to regain the weight lost during the first week. After the initial loss of weight the infant looks old, and its body is wrinkled, especially about the face and neck.

What are the three important things to be considered in the care of the premature infant?

Maintenance of the infant's bodily temperature, ad-

ministration of nourishing and easily assimilable food, and good nursing.

Describe the care of the premature-born following birth.

The premature infant should be handled as little as possible after delivery, since it is easily depressed. The whole body should be anointed with benzoinated lard, and attention should be given to the folds, or creases of the body, especially about the neck, ears, axilla, groins, elbows, knees, and between the fingers and toes. The unguent should be gently wiped off with a soft, warm, towel, and the infant should be dressed and placed in a warm, improvised incubator, if an incubator is not at hand. In case the infant appears extremely weak the first dressing should be delayed until it has recovered from the shock of birth.

Describe the general care of a premature infant.

During the first week the infant's body should be anointed with benzoinated lard daily, and at the same time it should be given a general massage. As soon as the child becomes stronger it should be given a tub-bath every other day at 103° F. At first the infant should be gently immersed in the water and taken out immediately, wrapped in a warm, soft towel and dried, and then anointed with benzoinated lard. The eyes, nose, and mouth should be given the same attention as those of the normal infant. Care must be taken not to injure the delicate mucous membrane since the premature-born is very susceptible to infection.

The external genitals of the female infant should be carefully bathed, and all smegma removed, and care must be taken so as not to infect these parts. The male infant's meatus urinarius should be examined frequently

since the slightest particle of dried secretion may arrest the flow of urine, and the napkins should be loosely adjusted so as to avoid pressure against the delicate organs. All wet or soiled napkins should be changed immediately, since the heat of the incubator causes the discharges to ferment, and they decompose quickly and thus render the air impure. The infant's skin should be examined often, especially about the buttocks, as it is easily eroded, and any slight abrasion might lead to infection.

The infant's temperature should be taken by rectum morning and evening, or every four hours, in case of fever. The child should be turned alternately from one side to the other so as to prevent stagnation of the blood in the lungs; and it should be wrapped in a warm napkin, after its daily bath, and weighed, and the entire condition carefully noted on the record-sheet each day.

Describe the infant's bed.

It consists of a basket, or a shelf suspended in the middle of the incubator. The mattress should be made of eiderdown, and no rubber-sheet or pillow is used.

Describe the infant's clothing.

The clothing should be made of the finest wool-flannel, except the napkins, which should be made of cotton material. The dress should be made without sleeves, on the style of a pillow-case with two rounded corners, so as to fit over the infant's shoulders. The size of the pattern should be thirty-four inches in length, and twenty inches in width at the bottom. It should be cut out for the neck, and left open in front a few inches, and stitched down. The infant should also be covered with a light wool-flannel blanket adjusted so as to form a hood over the head.

Describe the infant's diet.

The diet should consist of mother's milk if possible—diluted so as to contain two parts milk, and one part sterile water. In case mother's milk is not obtainable, the physician usually orders equal parts of whey and sterile water for the first few feedings, followed later with pure whey, and the addition of a little cream. Regular feedings should be established a few hours after birth, at intervals of one hour between each feeding for the first few days, and later every two hours. The amount given at each feeding at first is usually five to twenty drops, and if retained the amount should be increased to thirty or forty drops. Some infants require more food than others, and, as a rule, premature infants are given as much as they will take—although care must be taken so as not to overfeed them—on account of indigestion, regurgitation, etc. A little peptic salt should be added to each feeding in case of indigestion. In case the infant does not obtain sufficient nourishing and assimilable food it loses in weight, and lies in a stupor, followed by attacks of syncope, sometimes associated with marked cyanosis.

Describe the methods adopted for feeding the prematurely born infant.

The mother's milk should be drawn from the breast with a pump; and in case the infant is strong enough to nurse a nipple and swallow, the milk should be given from a small nursing-bottle with a tiny nipple. In case the infant is not strong enough to nurse, but swallows easily, a medicine-dropper should be used to administer the milk; or in case the infant cannot swallow, it should be fed by gavage. The premature child is usually put to the breasts as soon as it becomes strong enough to

nurse, and in case the mother's milk does not flow easily, or the nipples are too large, a teterelle should be used. The breast-pump, bottles, nipples, droppers, etc., used in feeding the infant should be thoroughly sterilized each time they are used, and kept in sterile water when not in use so as to avoid infection of the intestinal tract.

What is gavage.

It consists of feeding by a stomach-tube.

Describe gavage.

A soft rubber catheter—usually Nos. 8 to 10—should be used. The catheter should be attached to the glass part of the nipple-shield, or to a glass funnel; the infant should be placed on its back with the head tilted on one side, and the tube should then be filled with milk, clamped with the fingers, and gently inserted into the infant's throat and quickly forced into the stomach. The amount of food ordered should then be slowly poured into the funnel—which must not be allowed to become empty—as air would enter the stomach. In the removal of the tube, it should be pinched with the fingers, and withdrawn quickly so as to prevent any fluid in the tube trickling into the pharynx, which might cause vomiting. After the removal of the tube the infant should be kept quiet for a few minutes, and closely observed, since it is liable to regurgitate and become choked. Overfeeding is apt to occur in gavage, and it is characterized by distention of the abdomen, vomiting, indigestion, etc.

What is an incubator?

It consists of an apparatus which aids in the development of prematurely born infants.

Who first invented the incubator?

During the Middle Ages premature infants were usually wrapped in sheep skin, or placed in a jar of feathers, and at a later day they were wrapped in cotton or lamb's wool. It was not until about the middle of the eighteenth century that a physician named Stern constructed an oven with suitable appliances for regulating the temperature, in which he placed his own son. Although nothing came from this suggestion until in 1857, a physician named Deunce invented a double-walled bath tub, with a circulation of warm water in the interspace, for the rearing of premature and feeble infants. In 1866 Crede, of Leipsic, adopted an apparatus identical to that devised by Deunce—although he did not publish the results of his experiments until 1884. Four years earlier, in 1880, a physician named Tarnier engaged Oldile Martin, a poultry raiser of the Jardin des Plants, of Paris, to make an incubator for rearing premature and feeble infants, constructed on the plan of a chicken incubator, large enough to hold several infants, which was installed in the Maternité. Another physician named Winckel also constructed an incubator with a permanent bath-fluid, in which the infant floated. The fluid was intended to imitate the liquor amni of the placenta and avoid rapid evaporation. This apparatus is obsolete to-day.

Describe the general construction of incubators.

Incubators are box-shaped and resemble miniature rooms, provided with properly adjusted appliances for maintaining an even, moist temperature, and proper ventilation. They are generally constructed of wood, metal, and glass, and some makes are constructed of steel and glass. They are usually heated by hot-water systems,

consisting of water circulating through pipes connected directly with the heating apparatus of the institution in which the incubators are installed, or by placing a pan of water in the lower compartment of the incubator, usually about five inches below the infant's bed. The pan of water is connected with the boiler on the outside of the incubator by pipes, and the water is heated either by an alcohol lamp or a gas-burner. Several incubators are heated also by steam, hot-air, and hot water-bottle systems—the Truax is heated by steam, and the Auvard is heated by hot water-bottles.

The infant's bed consists of a basket or shelf suspended in the middle of the incubator, and the fresh air enters through an opening at the bottom which can be regulated by a sliding damper. The air is heated by passing around the heating apparatus, and after circulating around the infant it automatically escapes through the ventilator at the top of the incubator. This ventilator is provided with a small revolving fan which shows whether there is free circulation of air or not. As the air passes through the anemoscope it causes the fan to revolve, and this motion is continuous unless the fan is out of order or the air current is interfered with.

A thermometer is fastened inside of the incubator in such a way that it can be easily read through the window, and in some incubators a hygrometer—an apparatus for registering the degree of moisture of the air—is placed in the back part of the compartment. As a rule incubators either open on the top with a sliding door, or on the front side with a small door.

What is an anemoscope?

An apparatus which indicates the direction of the air current, and it consists of a revolving fan in the ventilator on the top of the incubator.

How can a premature infant be conveyed safely a long distance to a hospital?

In an ambulance incubator.

Describe the ambulance incubator.

It consists of a miniature incubator twenty-one inches long, eleven inches high, and eleven inches wide. It somewhat resembles a suitcase, and is easily carried by one person. The ambulance is provided with a circulating hot water system; the water is heated by an alcohol lamp on the outside. The compartment is lighted by electricity, and well ventilated. The infant can be closely observed through the glass window on the top of the incubator.

Describe the general care of the incubator for premature infants.

The temperature of the incubator is usually kept at about 89° F. In cases of exceedingly feeble and sensitive infants, the temperature should be regulated between 91° to 93° F. for the first few days, and later reduced to 89° F. As the infant develops and becomes older the temperature is usually maintained between 84°, and as low as 80° F., as directed by the physician. In order to obtain the temperature of the incubator the nurse should frequently consult the thermometer, which is placed at the side near the infant. The temperature can be increased or decreased by a particular apparatus provided for the purpose.

The moisture of the air in the Truax and the Auvard incubators is obtained by a moist sponge hung near the infant's head. The sponge should be frequently moistened with sterile water, and it should also be sterilized daily. In some incubators a hygrometer is provided to

measure the degree of moisture; in case the infant's lips become dry it is evident that the air in the incubator is too dry and moisture should be increased.

The hot water systems of the large steel incubators require little attention. Before the gas burner is lighted, the boiler should be filled by pouring water in a cup on the right side, and the system should be filled so that water stands in the cup. A little water should also be added daily to replace the water lost through evaporation. The boiler of the Truax incubators requires to be refilled three or four times daily, and other incubators, which are provided with steam-heated boilers, must be observed closely so that they do not boil dry. In incubators provided with a hot water-bottle system the bottles must be renewed frequently so as to keep them at an even temperature.

In case the incubator is provided with an anemoscope, the perfect circulation of the air can be easily observed from the motion of the fan, as the air passes up through the ventilator. Care must be taken, whenever handling the apparatus, on account of its delicate mechanism, and it should be kept thoroughly oiled and free from dust. In those incubators which are not provided with an anemoscope, the imperfect circulation of the air within the incubator is easily observed from the misty, or cloudy appearance on the inside of the glass window—which should be dry and clear. In case it becomes clouded with vapor the damper should be opened a little and shielded from drafts by hanging a towel over it.

How long should the premature infant be kept in the incubator?

About five or six weeks—depending entirely on the age and the general condition of the infant. It should

be removed from the incubator by degrees—that is, it should be taken out several times for short intervals each day, and placed in a warm basket, or crib—until it is able to remain out all day, and returned to the incubator for the night only. In case this method agrees with the infant, it should then be removed altogether from the incubator.

What can be used as a substitute for an incubator?

A large clothes' basket, prepared as follows: Line the basket with blankets, and place a soft pillow in the bottom; and between the basket and the blankets place six or eight hot water-bottles, which must be frequently changed. A thermometer should be placed by the side of the infant and closely observed—so as to keep the temperature at the required degree.

Where can an incubator be procured on short notice?

A modification of the Auvard—known as the Cooke incubator—was devised by Dr. Joseph Brown Cooke. Suitable incubators can also be rented on short notice from all the leading medical houses and registries for nurses in the large cities.

CHAPTER XVI

INFANT FEEDING

What are the methods for infant feeding?

Breast feeding, consisting of mother's or wet nurse's milk; mixed feeding, consisting of a combination of human and artificial feedings, and artificial feeding only.

What is the ideal food for infants?

Mother's milk.

What is the composition of human milk?

It is composed of thirteen parts of solid substance and of eighty-seven parts of water.

Of what does the solid substance consist?

Proteids, fats, sugar, and mineral salts.

What are the proteids?

They are the albuminoids, or caseins, the curds of the milk.

What are the fats?

The cream of the milk.

What is the sugar?

Carbohydrates, or lactose, sugar of milk.

Are the solid elements of milk necessary for the infant?

Yes.

Why are the proteids essential?

They are essential for the building up of the cells of the body, especially those of the blood-vessels, muscles, etc.

Why are the fats important?

They are essential for the proper growth of the bones, development of the nerves, the fatty tissues, and the production of animal heat in the body.

Why is the sugar necessary?

A part of the sugar produces fat and also increases animal heat in the body.

Why are the salts necessary?

They are important for hardening the bones, especially during the rapid development of the bony system of infancy.

What is the value of the water?

Water produces a solution in which the solid substances of milk are dissolved and finely divided so that they are more easily digested. It is also valuable for the elimination of the waste products of the body.

Artificial Feeding.

What is generally used as a substitute for mother's, or human milk?

Cows' milk, modified to suit individual infants.

Is the milk from a single cow, or the mixed milk from several cows, preferred for infant feeding?

Mixed, or herd milk is preferred.

Why is herd milk preferred?

Because it is more uniform in quality than the indi-

vidual cow's milk, which is more or less subject to daily variations.

What are the important considerations in selecting milk for infant feeding?

It should be obtained from healthy cows, and must be pure and fresh.

Describe the principal difference between cows' milk and human milk.

Cows' milk contains the same ingredients as human milk, although they differ in proportions. The amount of fat and water are about the same percentage in each milk. Cows' milk contains a little more than half the amount of sugar, more than twice the amount of salts, and three times the amount of proteids found in human milk. The elements contained in cows' milk also differ in character from those of human milk, and cows' milk therefore is more difficult for the infant to digest. Human milk forms in small, flocculent curds in the stomach, and dissolves easily; cows' milk coagulates, and forms large, solid curds in the stomach, which dissolve very slowly. Human milk is alkaline in its reaction, and cows' milk is more or less acid in its reaction; human milk is sterile, and cows' milk contains bacteria.

Compare the composition of human milk with that of cows' milk.

	HUMAN MILK			COW'S MILK		
Proteids	1.5	per	cent	4.0	per	cent
Fats	4.0	"	"	3.5	"	"
Sugar	7.0	"	"	4.3	"	"
Salts	0.2	"	"	0.7	"	"
Water	87.3	"	"	87.0	"	"

(*Dr. De Lee.*)

How is the proportion of proteid decreased in preparing cows' milk?

By diluting the milk.

What is used to dilute milk mixtures?

Boiled water, or some kind of cereal water—usually barley water.

Why is cereal water frequently preferred instead of boiled water?

It serves as nourishment, and assists in the prevention of formation of hard curds of milk in the infant's stomach.

How is the acidity of cows' milk overcome?

By adding lime water, or bicarbonate of soda, to the mixture.

How much lime water, or bicarbonate of soda, is generally added to twenty ounces of mixture?

One ounce of lime water, or ten grains of bicarbonate of soda.

How is the cream divided?

It is divided into centrifugal and gravity cream.

What is centrifugal cream?

It consists of the cream which is separated from the milk with an apparatus known as the centrifugal machine. The cream is sold in small sealed bottles.

What per cent. of fat does centrifugal cream contain?

About twenty per cent.

What is gravity cream?

It consists of the cream which is separated from the

top of bottle milk, which rises after the milk has stood undisturbed eight to twelve hours; or it may also be skimmed from the top of milk set in pans which has stood the same length of time.

What per cent. of fat does gravity cream contain?

About sixteen per cent.

What is considered the best bottled milk sold?

Certified milk.

Describe the preparation of certified milk.

Certified milk is obtained from herds which are free from disease. Each cow is properly fed, hygienically stabled, and groomed, and all utensils used for milking are sterilized. As soon as the milk is received it is filtered through sterile gauze and absorbent cotton into sterile milk-cans, or bottles, after which it is sealed, rapidly cooled, and brought to a temperature below 40° F., and retained at that degree until it reaches the consumer.

Is the bottled cream, or the top-milk, used to increase the fat in preparing milk mixtures in general practice?

The top milk mixture is generally used instead of bottled cream.

Top Milk Mixture

What is understood by the modification of cows' milk?

It consists of altering the proportions of the different elements in the milk so that it is more easily digested.

What articles and supplies are required for preparing modified milk?

The sterile articles include feeding-bottles, graduated measuring-glass, funnel, pitcher for mixing the milk, bowl, spoon, Chapin's* ounce dipper, siphon, and non-absorbent cotton for corking the bottles. The supplies, including a quart bottle of certified milk, a small bottle of standard cream, sugar of milk, lime water, or bicarbonate of soda, sterile water, and whey or cereal water—usually barley water—is sometimes ordered in place of water.

What must be remembered in preparing milk mixtures?

Everything used must be absolutely sterile, and each bottle should be corked with sterile, non-absorbent cotton as soon as filled.

What methods are adopted for the removal of the top milk?

Top milk may be removed from bottle-milk, either with a small cream dipper, or with a siphon, and from a pan of milk with a large spoon.

How is the top milk removed from a bottle with a dipper?

The upper ounce of cream should first be removed with a tea-spoon, after which Chapin's ounce cream dipper should be introduced into the bottle until its upper edge is even with the cream, then gradually lower the dipper until it is filled. This process should be repeated until the desired amount of top milk is obtained.

* Chapin's dipper was devised by Dr. Henry Dwight Chapin. It has been adopted by Dr. Edwin B. Cragin in Sloane's Maternity Milk Set.

What is a siphon?

A siphon consists of a glass tube; bent at an angle, so that one arm is longer than the other, which is used to transfer fluid from one vessel to another, over an intervening elevation from a higher to a lower level.

Describe the methods for siphoning milk.

Everything used for siphoning should be absolutely sterile, including a glass tube, bent V-shaped, so that one arm of the tube is about eight inches long and the other about four inches long; a piece of rubber tubing about eight inches long should also be attached to the outer end of the siphon. In siphoning the bottom milk, first place a quart bottle of milk near the edge of a table, and the graduated measuring-glass should be held just below the bottle. Attach the rubber tubing to the short arm of the siphon; fill the tube with sterile water, and clamp it with the fingers, after which insert the long arm of the glass tube in the bottle, and unclamp the fingers. The suction caused by the escaping water forces the bottom milk to flow over the V-shaped angle of the siphon into the measuring-glass. In case sixteen per cent. cream is desired twenty-five ounces of bottom milk should be removed, thus leaving the required seven ounces of cream in the bottle.

In order to obtain the cream, or top milk mixture, without disturbing the bottom milk, first attach the rubber tube to the long arm of the siphon; fill the tube with sterile water, and clamp it with the fingers; after which place the short arm of the siphon in the bottle, and unclamp the fingers. The suction caused by the escaping water forces the required number of ounces of top milk to flow over the V-shaped angle into the measuring-glass.

How is a glass tube made V-shaped?

A glass tube about twelve inches long is required. Hold the part of the tube which you desire to bend over a gas flame until it becomes hot—but *not* red-hot—the glass is thus softened, and easily bent to any angle desired.

What is the bottom milk?

It consists of the fat-free, or skimmed milk.

Why should the cream not be poured off the top of bottle-milk?

It disturbs the cream and bottom milk, and therefore alters the proportions of fat in the top milk.

What percentage of fat does a quart bottle of thoroughly mixed top and bottom milk contain?

Four per cent.

What per cent. of fat do the upper two ounces of cream contain after four per cent. mixed milk has stood eight to twelve hours?

Twenty-four per cent.

What per cent. of fat do the upper six ounces of cream contain?

Twenty per cent.

What per cent. of fat do the upper seven ounces of cream contain?

Sixteen per cent.

How much fat do the upper nine ounces of cream contain?

Twelve per cent.

What is the usual amount of lime water added to milk mixtures?

About one ounce in every twenty ounces of mixture.

How is the twelve per cent. cream obtained?

By mixing two parts of sixteen per cent. cream with one part of four per cent. milk. It may also be obtained by removing the upper nine ounces of cream from a quart bottle of milk.

What percentage of fat, sugar, and proteid is contained in the upper nine ounces of top milk?

Twelve per cent. of fat, four per cent. of sugar, and four per cent. of proteid.

What is the percentage of proteid, in proportion to that of fat, contained in the upper nine ounces of cream?

There is one part of proteid to three parts of fat.

How may the percentage of proteid be decreased in twelve per cent. cream?

By diluting the amount three times its volume.

How may the proteid be increased?

By adding skimmed milk to the mixture.

What is the percentage of sugar, after diluting the twelve per cent. cream three times its volume?

One per cent.

How may the sugar be increased?

By adding sugar of milk to the mixture.

What is the usual amount added?

About one ounce of sugar of milk to every twenty ounces of mixture.

What may be used as a substitute in case sugar of milk is not available?

Granulated (cane) sugar.

What amount of granulated sugar is usually added to the mixture?

About two-thirds of an ounce to every twenty ounces of mixture.

What must be remembered in preparing modified milk?

It must be remembered that the total amount of the mixture should contain a definite percentage of fat, sugar, and proteids, as ordered.

What is necessary to understand in order to estimate the required per cents of the ingredients prescribed?

It is important to understand just what percentage each ingredient contains, and the rules for estimating those percentages prescribed.

What percentage of fat, sugar, and proteid does sixteen per cent. cream contain?

Sixteen per cent. of fat, about four per cent. of sugar, and four per cent. of proteid.

What percentage of fat, sugar, and proteid does twelve per cent. cream contain?

Twelve per cent. of fat, about four per cent. of sugar, and four per cent. of proteid.

What percentage of fat, sugar, and proteid does skimmed milk contain?

No fat, about four per cent. of sugar, and four per cent. of proteid.

What percentage of fat, sugar, and proteid does whey contain?

No fat, four per cent. of sugar, and one per cent. of proteid.

Does the sugar contain any fat and proteid?

No.

What rule may be adopted for determining the percentage of fat, proteid, and sugar in any given amount of mixture?

1. Add up the total amount of all the fluid ingredients; multiply the percentage of fat of the cream by the amount of the cream used for the mixture; divide the result by the total amount of the mixture ordered, and the result will determine the per cent. of fat in the mixture. 2. In making an estimate of the percentage of proteid it must be remembered that one-fourth of the total amount of a given mixture equals one per cent. of proteid; e.g., in a mixture of twenty ounces, which calls for five ounces of twelve per cent. cream, multiply the percentage of proteid by the number of ounces of cream used, and divide the result by the total amount of the mixture ordered, and the result will be one per cent. of proteid. The percentage of sugar may also be estimated by the same rule.

How would you prepare modified milk?

In case the twelve per cent. cream is used as a basis: First obtain the cream by removing the upper nine ounces of top milk from the bottle, after which obtain the desired percentage of fat from this. If it proves necessary to increase the percentage of proteid, add skimmed milk; and in order to increase the percentage

of sugar, add dry sugar—about one ounce to twenty ounces of mixture. Add one ounce of lime water, and a sufficient quantity of sterile water to make the amount of mixture ordered.

How are the ingredients mixed together?

Pour one ounce of lime water in the graduated measuring-glass; add one ounce of sugar of milk—dissolve it thoroughly—in case the solution is cloudy, it should be filtered through sterile absorbent cotton. (The sugar may be dissolved in the sterile water if preferred.) Then add the required number of ounces of cream, and lastly pour a sufficient quantity of sterile water in the measuring-glass to make the amount of mixture ordered.

Does the sugar of milk add to the total amount of the mixture?

No, it is dry, and dissolves, and therefore does not add to the amount of the mixture.

What is the usual amount of mixture ordered?

Twenty ounces of mixture.

What is the formula of a prescription calling for 1.20 per cent. of fat, 5 per cent. of sugar, and .40 per cent. of proteid in a mixture of twenty ounces?

Lime water	℥i.
Cream, 12 per cent.	℥ii.
Sterile water	℥xvii.
Total amount of mixture	20 ounces.
Add sugar of milk	I ounce.

How would you estimate the percentage of fat, and proteid in the above formula?

- i. Multiply the per cent. of fat in the twelve per

cent. cream, by the two ounces of cream used, and divide the result by the total amount of the mixture, as follows:

$$\text{E. g.}—12 \times 2 = 24 \div 20 = 1.20 \text{ per cent. of fat.}$$

2. Multiply the per cent. of proteid, by the two ounces of cream used, and divide the result by the total amount of mixture, as follows:

$$\text{E. g.}—4 \times 2 = 8 \div 20 = .40 \text{ per cent. of proteid.}$$

At what age should the above percentage of fat, sugar, and proteid be given to an infant?

About the fourth day.

What is the formula of a prescription calling for 1.80 per cent. of fat, 6 per cent. of sugar, and .60 per cent. of proteid in mixture of twenty ounces?

Lime water	℥i.
Cream, 12 per cent.	℥iii.
Sterile water	℥xvi.
Total amount of mixture	20 ounces.
Add sugar of milk	I ounce.

Give illustrations how to estimate the percentage of fat and proteid in the above formula.

1. E. g.— $12 \times 3 = 36 \div 20 = 1.80$ per cent. of fat.
2. E. g.— $4 \times 3 = 12 \div 20 = .60$ per cent. of proteid.

What percentage of fat, sugar, and proteid should be given to an infant about a week old?

About 1.80 per cent. of fat, 6 per cent. of sugar, and .60 per cent. of proteid.

What is the formula of a prescription calling for 2.40 per cent. of fat, 6 per cent. of sugar, and .80 per cent. of proteid?

Lime water	$\bar{3}i$.
Cream, 12 per cent.	$\bar{3}iv$.
Sterile water	$\bar{3}xv$.
Total amount of mixture	20 ounces.
Add sugar of milk	1 ounce.

Give illustrations how to estimate the percentage of fat and proteid in the above formula.

1. E.g.— $12 \times 4 = 48 \div 20 = 2.40$ per cent. of fat.
2. E.g.— $4 \times 4 = 16 \div 20 = .80$ per cent. of proteid.

At what age should the above proportion of fat, sugar, and proteid be given to an infant?

About the fourth week.

What is the formula of a prescription calling for 3 per cent. of fat, 6 per cent. of sugar, and 1 per cent. of proteid?

Lime water	$\bar{3}i$.
Cream, 12 per cent.	$\bar{3}v$.
Sterile water	$\bar{3}xiv$.
Total amount of mixture	20 ounces.
Add sugar of milk	1 ounce.

Give illustrations how to estimate the percentage of fat and proteid in the above formula.

1. E.g.— $12 \times 5 = 60 \div 20 = 3$ per cent. of fat.
2. E.g.— $4 \times 5 = 20 \div 20 = 1$ per cent. of proteid.

At what age should the above proportion of fat, sugar, and proteid be given to an infant?

About the second month.

What is the formula of a prescription calling for 3.60 per cent. of fat, 6 per cent. of sugar, and 1.20 per cent. of proteid?

Lime water	℥i.
Cream, 12 per cent.	℥vi.
Sterile water	℥xiii.
Total amount of mixture	20 ounces.
Add sugar of milk	1 ounce.

Give illustrations how to estimate the percentage of fat and proteid in the above formula.

1. E.g.— $12 \times 6 = 72 \div 20 = 3.60$ per cent. of fat.
2. E.g.— $4 \times 6 = 24 \div 20 = 1.20$ per cent. of proteid.

What is the percentage of fat, sugar, and proteid given to an infant about three months of age?

About 3.60 per cent. of fat, 6 per cent. of sugar, and 1.20 per cent. of proteid.

How may 8 per cent. cream be obtained?

By mixing one part of sixteen per cent. cream with two parts of four per cent. cream—whole milk—or by removing the upper sixteen ounces of top milk from the bottle after it has stood undisturbed eight to twelve hours.

What is the percentage of proteid, in proportion to the fat in 8 per cent. cream?

One part of proteid to two parts of fat.

What is the formula of a prescription calling for 2 per cent. of fat, 6 per cent. of sugar, and 1 per cent. of proteid?

Lime water	$\bar{3}i$.
Cream, 8 per cent.....	$\bar{3}v$.
Sterile water	$\bar{3}xiv$.
Total amount of mixture	20 ounces.
Add sugar of milk	I ounce.

Give illustrations how to estimate the percentage of fat and proteid in the above formula.

1. E. g.— $8 \times 5 = 40 \div 20 = 2$ per cent. of fat.
2. E. g.— $4 \times 5 = 20 \div 20 = 1$ per cent. of proteid.

What is the formula of a prescription calling for 3 per cent. of fat, 6 per cent. of sugar, and 1.50 per cent. of proteid?

Lime water	$\bar{3}i$.
Cream, 8 per cent.....	$\bar{3}viiss$.
Sterile water	$\bar{3}xiss$.
Total amount of mixture	20 ounces.
Add sugar of milk	I ounce

Give illustrations how to estimate the percentage of fat and proteid in the above formula.

1. E. g.— $8 \times 7\frac{1}{2} = 60 \div 20 = 3$ per cent. of fat.
2. E. g.— $4 \times 7\frac{1}{2} = 30 \div 20 = 1.50$ per cent. of proteid.

What is the formula of a prescription calling for 4 per cent. of fat, 7 per cent. of sugar, and 2 per cent. of proteid?

Lime water	$\bar{3}i$.
Cream, 8 per cent.....	$\bar{3}x$.
Sterile water	$\bar{3}ix$.
Total amount of mixture	20 ounces.
Add sugar of milk	I ounce.

Give illustrations how to estimate the percentage of fat and proteid in the above formula.

1. E. g.— $8 \times 10 = 80 \div 20 = 4$ per cent. of fat.
2. E. g.— $4 \times 10 = 40 \div 20 = 2$ per cent. of proteid.

How would you increase the twenty ounce mixture to twenty-five, thirty, thirty-five, and forty ounces in amount?

“To make:

- 25 ounces of any formula add one-quarter more of each ingredient.
- 30 ounces of any formula add one-half more of each ingredient.
- 35 ounces of any formula add three-quarters more of each ingredient.
- 40 ounces of any formula add as much more of each ingredient.”

(Dr. Holt.)

May modified milk be obtained for infant feeding?

Yes, there are laboratories—the Walker-Gorden Laboratories are recognized as the best, with branch offices in all large cities—where modified milk is prepared according to the physician’s prescription. Prescriptions call for the percentages of the different elements, and specify the amount of each feeding, and the number of daily feedings, etc., required. The bottles are sealed, placed in a special basket, and sent to the patient’s home.

What two essential things should be remembered in handling the milk?

The milk should be kept clean, and free from contamination of any kind.

Describe the general care of the milk in private practice.

As soon as the certified milk is received, the bottles should be placed on the ice. In case the milk cannot be obtained in sealed bottles—but comes in bulk—it should be poured into sterile Mason jars, covered and placed on the ice immediately.

The refrigerator should always be kept scrupulously clean. The milk should not be allowed to remain uncovered, as it is liable to become contaminated. In any case the milk should be kept in a separate compartment of the refrigerator, as it easily absorbs the odors of meats, vegetables, etc., and thus acquires a foreign flavor. The lower compartment of the ice-chest is the coolest. After the milk has once been placed in the ice-chest, the bottles should not be disturbed any more than possible. It is therefore advisable to prepare the whole number of feedings required for twenty-four hours at the same time. The amount of each feeding should be placed in separate bottles, corked with sterile, non-absorbent cotton, and placed in the ice-chest until needed.

Sterilization and Pasteurization

Describe the method for sterilization of milk.

The milk is heated until it reaches 212° F., and it should be maintained at that degree for one hour.

Why should milk be sterilized?

Sterilization destroys the bacteria in milk, and especially during warm weather it also serves to keep the milk from becoming sour.

Why is sterilized milk often objected to for feedings?

It is more difficult to digest than raw milk, and it is also less nutritious, and more constipating.

Describe the method for preparing sterilized milk feedings.

The required feeding-bottles—usually ten or twelve in number—should be sterilized. Filled with the amount of milk ordered each bottle contains enough for one feeding, and should be corked with non-absorbent cotton as soon as filled. The bottles should then be placed either in a deep pan, small boiler, or a deep pail, large enough to hold them. A large piece of board, one inch thick, should first be placed in the bottom of the pan or pail used, so as to prevent the bottles from coming in direct contact with the bottom of the vessel used. Then pour enough cold water about the bottles so as to reach as far up as the necks of the bottles. As soon as the water reaches the boiling point the vessel should be covered tightly and set on the back part of the stove to cool, or rather to steam, for one hour. After this the bottles should be removed, cooled, and placed on the ice.

What method may be adopted so as to render the milk sufficiently sterile without altering its flavor and food values?

The method of pasteurization.

Describe the method of pasteurization.

A special apparatus—known as *Freeman's Pasteurizer*, is used to pasteurize milk. In case a pasteurizer is not at hand, however, one may be improvised by using a wire basket and an agate-ware pail. Prepare and fill the feeding-bottles the same as for sterilization of milk, etc. Place the bottles in the basket, and select a large pail, equally large enough to contain ten or twelve bottles. Place a few blocks of kindling wood, an inch in thickness, or a heavy towel folded in a square in the

bottom of the pail, so as to prevent the basket containing the bottles coming too close in contact with the metal of the pail. The pail should then be filled with cold water so that it reaches up to the necks of the bottles in the wire basket; as soon as the water becomes heated to a point between 155° to 167° F., it should be maintained for about thirty minutes, after which the bottles of milk should be removed, cooled as rapidly as possible, and placed on the ice until needed.

How may the feeding-bottles be cooled rapidly?

The agate pail containing the bottles should be placed under running water, which at first should be warm, until the bottles are cooled, then they should be cooled as rapidly as possible without breaking the bottles by adding large pieces of ice. The bottles then should be removed and placed in the ice-chest.

Why is it essential to cool pasteurized milk as quickly as possible?

Pasteurization of milk while it destroys the bacteria—the living germs in the milk—does not kill their spores, or eggs. It is therefore essential to cool the milk as rapidly as possible to a temperature below 40° F., in order to prevent the development of the spores, or eggs.

Is pasteurized or raw milk preferred for infant feeding?

The pure, fresh, raw milk is preferred.

Care of the Feeding-Bottles and Nipples

What bottles are considered the best for infant feeding?

The round, smooth, graduated, feeding-bottles with wide mouths are preferred, since they are cleansed without difficulty.

Describe the care of the feeding-bottles.

The bottles should be rinsed out with cold water, and thoroughly washed with a bottle-brush and castile soap. Each bottle should then be rinsed with water and filled with a two per cent. solution of soda. Before refilling the bottles with milk they should be sterilized by placing them in a pan of boiling water, and allow them to remain therein for twenty minutes.

What nipples are considered the best for infant feeding?

The black, rubber nipples, which slip over the neck of the feeding-bottle. The opening in the nipple should not be large enough to permit the milk to escape in a stream, but only large enough to allow the milk to escape drop by drop, when the bottle is inverted.

Why is a large opening in the nipple objectionable?

A large opening in the nipple results in a too rapid flow of milk, which is liable to choke the infant; and too rapid nursing is liable to give the infant colic, indigestion, etc.

Describe the care of the rubber nipples.

The nipples should be thoroughly washed and rinsed after each feeding, and all the nipples used should be boiled daily for five to ten minutes, and placed in a jar of saturated boracic acid solution when not in use.

*Rules for Feeding***How should the milk be prepared before each feeding?**

The milk should be heated to 98° F., by holding the bottle in warm water until the desired temperature is

obtained. A sterile nipple should always be used for each feeding.

How long should the infant be allowed for each nursing?

Fifteen to twenty minutes.

What is considered the proper amount of milk required for infant feedings?

The following table presents the amounts required for an average infant. A small infant therefore requires a lesser, and a large infant a greater amount. The frequency of the feedings should correspond with those of nursings.

Period of Life.	Number of Feedings.	Hours Between Feedings.	Night Feedings.	Amount of Each Feeding.	Total for Twenty-four Hours.
3d to 7th day	7	3	1	1½ to 2 oz.	10 to 15 oz.
2d and 3d weeks	7	3	1	2 to 3½ oz.	15 to 24 oz.
4th and 5th weeks . . .	7	3	1	3 to 4 oz.	21 to 28 oz.
6th week to 3d month	7	3	0	4 to 5 oz.	28 to 35 oz.
3d to 6th month	6	3½	0	5 to 6½ oz.	30 to 38 oz.
6th to 9th month	5	4	0	6½ to 8 oz.	32 to 40 oz.
9th to 12th month . . .	5	4	0	7 to 9 oz.	35 to 45 oz.

(*Dr. De Lee.*)

What symptoms indicate too small amount of sugar in the infant's feedings?

The infant's gain in weight is slow, and sometimes there is no increase at all, otherwise the child appears in good health. These symptoms may be due to too little sugar in the milk.

What symptoms indicate an excess of sugar in the feedings?

The infant may have colic, green, watery, acid stools,

without curds; together with an irritation of the buttocks, etc.

What symptoms indicate too much fat?

Sour vomiting, one to two hours after feedings, and watery stools containing large, soft curds.

What symptoms indicate too little fat?

Constipation, and the stools are dry and hard.

What symptoms indicate too much proteid?

Vomiting, consisting of hard, curdy masses, and constipation, the stools containing hard, dry curds, etc.

What symptoms indicate that the infant has been given too much food at a feeding?

Regurgitation immediately after feeding.

What foods are generally given in case the infant is unable to digest milk?

Whey, cereal and egg-water. (See Chapter on Dietary.)

What elements of milk are contained in whey?

Proteid, sugar, salts, and water.

Mention some other foods which are sometimes added to the infant's diet during the first year.

Oatmeal and barley gruels; beef-juice, albumen-water, peptonized milk, whey with milk, cream, white of egg, or wine, etc. (See Chapter on Dietary.)

CHAPTER XVII

DIETARY

Whey, Barley, Oatmeal and Rice-water, Gruels, etc.

How would you prepare whey?

Pour one pint of milk into a double boiler, heat the milk to 98° to 100° F., then add one teaspoonful of essence of pepsin, or one-half a tablet of junket, which should be dissolved in cold water. Mix gently by stirring the milk, and let it stand until thoroughly coagulated. Break up the curds with a fork, and strain the whey through gauze, or muslin, and place on the ice to cool.

In adding milk or cream to whey the whey should be prepared the same as above, but it must be heated to about 155° F., and kept at that degree ten minutes, so as to prevent the cream from curdling.

How would you prepare wine whey?

Pour one pint of milk into a saucepan, and place over the fire until the milk is brought to the boiling point, then quickly add two ounces of sherry wine, and let it stand about fifteen minutes. At the same time skim off the curds as they rise, and add another half tablespoonful of sherry wine. Skim the curds again, and strain the whey through several thicknesses of gauze or muslin, and place on the ice.

How would you prepare barley-water and barley-gruel?

Barley-water may be prepared from the whole pearl barley, or from barley flour. In case the whole barley is used, take one tablespoonful and wash it thoroughly, add half a pint of cold water, and boil for five minutes. Decant this first water, and pour one quart of boiling water over the barley, and allow it to boil down slowly to one pint, after which strain through gauze or muslin.

Barley-gruel is prepared in the same manner as barley-water, except that two tablespoonfuls or more of barley, instead of one, are used to a quart of water, according to the consistency of the gruel desired.

Barley-water prepared from flour requires one scant tablespoonful dissolved in one ounce of cold water; add a pinch of salt, and one pint of boiling water. Boil for about twenty minutes, and add enough boiled water to make a pint.

Barley-gruel, or jelly, is prepared in the same manner as the above, except that two tablespoonfuls, or more, of flour is used to a pint of water, according to the consistency of the gruel desired.

How would you prepare oatmeal-water, and oatmeal-gruel?

They are prepared in the same manner as barley-water, and barley-gruel, using the same proportions of grain, or flour to the same amounts of water, etc.

How is rice-water prepared?

Wash two tablespoonfuls of the best rice, and place in an agate-ware saucepan; add one pint of boiling water, one-fourth teaspoonful of salt, and allow it to simmer until the rice becomes thoroughly cooked. Strain, and serve either hot or cold.

How is gum-arabic water prepared?

Take one ounce of gum-arabic, dissolve in one pint of boiling water; add one ounce of sugar, and two ounces of sherry wine, or the juice of one large lemon. Keep on ice until needed.

How would you prepare arrowroot-water?

Mix one teaspoonful of arrowroot with water enough to make a smooth paste; add one pint of boiling water, and stir continuously until it boils five minutes. Place on ice until needed.

How is flaxseed-tea prepared?

"Flaxseed whole, 1 ounce; white sugar, 1 ounce (heaped tablespoonful), licorice-root, $\frac{1}{2}$ ounce (2 small sticks, crushed well), lemon-juice, 4 tablespoonfuls. Pour on these materials 2 pints of boiling water; stand in a hot place four hours; strain off the liquor." (*Dr. De Lee.*)

How would you prepare albumen-water?

Place the white of one egg in a milk-shaker, or a Mason jar; add eight ounces of ice cold water, shake thoroughly a few seconds. Strain through gauze so as to remove the froth, and add salt and sugar to taste.

Albumen-milk is prepared in the same manner as the above.

*Peptonized Milk***What is peptonized milk?**

It is milk which has been partially digested.

Describe the method of peptonizing milk by the cold process.

Pour four ounces of cold boiled water into a quart

bottle, in which dissolve one tube of peptonizing powder, add one pint of fresh milk, and shake the whole thoroughly. Place on the ice, and serve cold without subjecting the milk to heat.

Describe the method of peptonizing milk by the warm process.

Mix all the ingredients as described above for the cold process; place the bottle containing the mixture in a pan of water heated between 115° to 120° F., and allow it to remain for ten minutes. Place on the ice immediately so as to check further digestion of the milk. The mixture should not be heated long enough to render it bitter.

Describe the method of fully peptonizing milk?

Pour four ounces of cold water into a quart bottle, in which dissolve one tube of peptonizing powder; add one pint of milk, shake thoroughly, and place in a pan of water heated between 115° to 120° F., and allow it to remain for two hours.

How is fully peptonized milk usually administered?

By gavage or rectal feeding.

Why?

On account of the bitter taste of the milk.

Buttermilk and Kumiss

How is buttermilk prepared from lactose tablets?

"Fresh skim milk 1 quart.

Hot water $1\frac{1}{2}$ to 2 cupfuls.

Salt $\frac{1}{2}$ teaspoonful.

"Lactone tablet No. 1.—Add hot water to milk; then salt; then the lactone tablet well crushed. Stir well, cover with clean towel, and leave at ordinary room temperature. When the milk becomes thick and fermented, set in icebox for use. Before using, heat the buttermilk until perfectly smooth.

"Lactose Solution.—To each ounce of milk-sugar add $\frac{1}{2}$ oz. of water (boiled). Heat until the milk is dissolved. Filter, put in a sterile bottle, plug with sterile absorbent cotton, and put on ice.

"Use $\frac{3}{4}$ ss. water for every $\frac{3}{4}$ of sugar ordered. Subtract this amount from the total amount of water ordered." (*Amanda K. Beck.*)

How is lactose jelly prepared?

"Gelatine	$\frac{1}{2}$ teaspoonful	} 1 portion
Cold water	2 tablespoonfuls	
Orange juice	$1\frac{1}{2}$ oz.	
Lemon juice	1 teaspoonful	
Cane sugar	$1\frac{1}{2}$ teaspoonfuls	
Sherry	1 teaspoonful	
Lactose	3 tablespoonfuls ($1\frac{1}{2}$ oz.)	
Boiling water	$1\frac{1}{2}$ oz.	

"Lactose is boiled in water until clear. Pour over soaked gelatin to dissolve and add other parts. Strain through double gauze and chill.

"May also be flavored with grape or raspberry juice."
(*Dr. Carter.*)

How is kumiss prepared?

Take one quart of fresh milk, add one-half an ounce of sugar, and one-third of a cake of yeast; dissolve in a little cold water, and stir gently in the milk. Pour the

mixture in a bottle with a patent stopper ; shake well and stand in the ice-box for about three days. The bottle should then be placed on its side, and occasionally turned. Kumiss will keep thus for an indefinite length of time.

Broths, Beef-Tea, and Soups

How would you prepare chicken-broth?

Take a small chicken, or half of a fowl, and cut it in small pieces ; add one quart of cold water, one tablespoonful of rice, a pinch of salt, little parsley, and boil one and one-half hours. The scum should be carefully removed as it rises. Strain through an ordinary colander, and cool. Remove all fat and serve hot.

How would you prepare mutton-broth?

Take one pound of mutton, including the bones, cut in small pieces ; add one quart of cold water and a pinch of salt ; boil slowly two to three hours, until the meat is thoroughly done. The scum should be carefully removed as it rises. Strain the broth and set it away to cool, after which remove all the fat. Serve hot.

A tablespoonful of barley or rice may also be added to the broth.

Veal broth is prepared in the same manner as the above.

How is clam broth prepared?

Take several large clams, scrub them thoroughly, place in a pan, and add a cup of cold water. Boil for a few minutes, or until the shells open and the juice escapes. Remove the juice, strain through gauze or muslin ; season to taste and serve hot.

How is oyster-broth prepared?

Take one dozen of large oysters, cut in small pieces, place in a pan, and add a cup of cold water. Bring to the boiling point, and allow the oysters to simmer for five minutes. Strain through gauze, season to taste, and serve hot. Milk is sometimes added for those who desire it.

How is beef-juice prepared?

Take a small, juicy steak; cut it in inch square pieces, broil quickly over a hot fire until light brown, then press out the juice with a heated lemon-squeezer. Add salt to taste, and serve either warm or cold. Beef-juice should not be heated above 160° F., as it coagulates the albumen. It is sometimes poured over toast, or added to milk. In the latter case the milk should not be heated above 100° F. before adding the beef-juice, as it will coagulate the albumen.

How would you prepare beef-tea?

Take a pound of lean, round steak, remove all fat, skin, etc.; cut in small pieces, place in a Mason jar, add half a pint of cold water, and allow it to stand two hours to digest. Then place the jar in a pan of water, over a slow fire, where the meat can simmer but not boil, for two hours. It should not be heated above 160° F., as it coagulates the albumen. The beef-tea should be clear when done, season to taste, and add water enough to make one pint.

How is vegetable soup prepared?

Take one beet, two carrots, and one handful of spinach. Chop fine, add one quart of cold water, and boil

about two hours. Strain through gauze or muslin. Add one quart of boiled water and season to taste.

How is Loefflund's malt soup prepared?

"*Solution No. 1.*—Malt soup..... ℥iii.

Warm water Oi.

"Dissolve the malt soup in the warm water.

"*Solution No. 2.*—Suspend or mix 3 ounces (in measure) or 2 ounces (in weight) of wheat flour in one pint of milk. Then strain the wheat flour and milk solution. Add Solution No. 1 to Solution No. 2, and bring slowly to a boil, stirring constantly, over a slow fire.

"For weak or young children, dilute Loefflund's soup mixture with one-third part water." (*Amanda K. Beck.*)

Miscellaneous Recipes

How is milk-punch prepared?

Take one cup of milk, one teaspoonful of sugar, one tablespoonful of brandy, and shake well. Add grated nutmeg, if desired.

How is egg-cordial prepared?

Take the white of one egg, a pinch of salt, and beat until frothy; add two tablespoonfuls of cream; beat again, and add one teaspoonful of sugar, one tablespoonful of brandy, or wine, and serve immediately.

How is orange- and egg-cordial prepared?

It is prepared the same as egg-cordial—except that the juice of one orange is used in place of cream and brandy.

How is cocoa prepared?

Pour one cup of water and one cup of fresh milk into

a saucepan; place over the fire; mix one teaspoonful of cocoa with a teaspoonful of sugar, add enough boiling water to make a paste. Pour the mixture into the boiling water and milk, and boil three to five minutes.

How is milk-toast prepared?

Heat two cups of milk, melt one tablespoonful of butter in a saucepan, add one tablespoonful of flour, and then slowly add the hot milk, and one-fourth teaspoonful of salt. Pour over one piece of dry toast and serve hot.

How are soft-boiled eggs prepared?

Place the eggs in a pan of cold water; bring them to the boiling point and remove the pan, and allow the eggs to steam in the water one minute.

How are poached eggs prepared?

Break one egg into a cup; pour milk or water into a saucepan, add about half a teaspoonful of salt to each pint of water or milk, and bring to the boiling point. Gently drop the egg and allow it to simmer until the white sets. Remove carefully.

How is an omelet prepared?

To each egg used take one tablespoonful of cold water, a pinch of salt; beat the yolk and white separately, and add the water to the yolk, and then lightly fold in the white of the egg. Place a piece of butter in the saucepan, as soon as hot, pour in the mixture, and allow it to cook until lightly browned. Then separate the omelet from the edge of the pan with a knife, roll it carefully into the shape of a jelly-roll. Serve on a hot platter.

How is floating-island prepared?

Take one-half cup of fresh milk, the yolk of one egg; beat together with one teaspoonful of sugar, a pinch of salt, few drops of vanilla or a little cinnamon, and pour the mixture into the hot milk. Cook until it is of a soft, creamy consistency, and pour in a dish to cool. Beat the white of one egg together with one teaspoonful of sugar until stiff; add a few drops of vanilla, and drop little islands of this on top of the custard when ready to serve.

In case fruits are added, cut them up in small pieces and place in the bottom of the dish, over which pour the custard.

How is baked custard prepared?

Beat one egg together with one tablespoonful of sugar; add a pinch of salt, a few drops of vanilla, one cup of fresh milk, and mix thoroughly together. Pour into custard-cups, set in a pan of warm water, and bake in the oven until the custard sets.

How is lemon-jelly prepared?

Take one tablespoonful of granulated gelatine, and soak it in one-fourth cup of cold water for twenty minutes; add one cup of boiling water, one-half cup of sugar, and one-fourth cup of lemon-juice. Strain into jelly mould and place on the ice to cool.

How is wine-jelly prepared?

It is prepared the same as lemon-jelly. Take one tablespoonful of granulated gelatine, and soak it in one-fourth cup of cold water for twenty minutes; add a cup of boiling water, one-half cup of sugar, one-half cup of sherry wine, one-fourth cup of orange-juice, the juice of one lemon, and, if desired, add cinnamon and cloves. Pour into jelly-mould and place on the ice to cool.

CHAPTER XVIII

ANTISEPTIC SOLUTIONS AND ENEMATA

Approximate Values of Apothecaries' Measure

Gallon.	Quart.	Pint.	Ounce.	Dram.	Minim.
G.	Qt.	Pt.	℥	ʒ	℥
1	= 4	= 8	= 128	= 1024	= 61440
	1	= 2	= 32	= 256	= 15360
		1	= 16	= 128	= 7680
			1	= 8	= 480
				1	= 60

Give table of domestic measure.

1 teaspoonful	= 1 dram,
1 dessertspoonful	= 2 drams,
1 tablespoonful	= 4 drams,
1 wineglass	= 2 ounces,
1 teacup	= 5 ounces,
1 tumbler	= 8 ounces.

Green Soap

How would you make tincture of green soap?

To make six ounces take:

Three ounces of green soap.

Two ounces of alcohol, 95%.

One ounce of ether.

Place the green soap in an agate-ware pan over a slow fire until it is dissolved, after which remove the pan to a cool place, and stir the soap frequently; before the

soap hardens add the other required ingredients and mix thoroughly.

To make green soap by the cold process, mix all the required ingredients together in an agate-ware pitcher, stir the mixture vigorously a few minutes every hour until thoroughly dissolved.

Bichlorid of Mercury Solution

Mention some of the advantages and disadvantages of bichlorid of mercury.

It destroys both bacteria and their spores. Its disadvantages are that it is exceedingly poisonous, destructive to instruments, and not good as a disinfectant for stools, sputum, etc.

What form of bichlorid of mercury is generally used in preparing solution for private practice?

The tablets, containing $7\frac{1}{2}$ grains of bichlorid of mercury, are usually used instead of powder.

Give the table for making 1 to 500 bichlorid solution.

1 pint requires 2 tablets, or 15 grains.

1 quart requires 4 tablets, or 30 grains.

1 gallon requires 16 tablets, or 120 grains.

Give the table for making 1 to 1000 bichlorid solution.

1 pint requires 1 tablet, or $7\frac{1}{2}$ grains.

1 quart requires 2 tablets, or 15 grains.

1 gallon requires 8 tablets, or 60 grains.

Give the table for making 1 to 2000 bichlorid solution.

1 pint requires $\frac{1}{2}$ tablet, or $3\frac{3}{4}$ grains.

1 quart requires 1 tablet, or $7\frac{1}{2}$ grains.

1 gallon requires 4 tablets, or 30 grains.

Give the table for making 1 to 4000 bichlorid solution.

2 quarts require 1 tablet, or $7\frac{1}{2}$ grains.
 1 gallon requires 2 tablets, or 15 grains.

Give the table for making 1 to 8000 bichlorid solution.

2 quarts require $\frac{1}{2}$ tablet, or $3\frac{3}{4}$ grains.
 1 gallon requires 1 tablet, or $7\frac{1}{2}$ grains.

How may bichlorid of mercury tablets containing $7\frac{1}{2}$ grains be divided in one-half?

Dissolve a whole tablet in two ounces of water and use one ounce, or one-half of the solution, which contains $3\frac{3}{4}$ grains.

Describe the general rules for making antiseptic solutions of different percentages.

Reduce the amount of the solution to drams—one pint contains 128 drams (see Table of Apothecaries' Measure); divide the total amount in drams by the required percentage of the solution.

To make a 5% = 1:20 carbolic solution, take one part of carbolic in twenty parts of water. To make a $2\frac{1}{2}\%$ = 1 to 40 carbolic solution, take one part of carbolic in forty parts of water. To make a 2% = 1 to 50 carbolic solution, take one part of carbolic in fifty parts of water, etc.

Example:

$$\begin{aligned} 5\% = 1:20. & \text{— 1 Pt.} = 128 \div 20 = 36\frac{1}{5} \\ & \text{1 Qt.} = 256 \div 20 = 312\frac{2}{5} \\ & \text{1 Gal.} = 1024 \div 20 = 351 \div 8 = 36 \\ & \qquad \qquad \qquad 33\frac{1}{2} \end{aligned}$$

*Carbolic Acid Solution***What is carbolic?**

Carbolic is a powerful antiseptic produced from coal tar.

What form of carbolic is generally used in preparing solutions?

For hospital use the carbolic crystals are used, after being dissolved in alcohol, 5%. For private practice carbolic acid, 95%, is used in liquid form for solutions, as follows:

The following tables are for practical purposes, and the amount of carbolic acid used is sufficiently correct for private practice, etc.:

Give the table for making a 1% = 1:100 carbolic solution.

1% = 1:100—1 pint requires	31¼
1 quart requires	32½
1 gallon requires	310

Give the table for making a 2% = 1:50 carbolic solution.

2% = 1:50—1 pint requires	32½
1 quart requires	35
1 gallon requires	32½

Give the table for making a 2½% = 1:40 carbolic solution.

2½% = 1:40—1 pint requires	33
1 quart requires	36½
1 gallon requires	33¼

Give the table for making a 3% = 1:33 carbolic solution.

3% = 1:33—1 pint requires	33¾
1 quart requires	37½
1 gallon requires	33¾

Give the table for making a 4% = 1:25 carbolic solution.

4% = 1:25—1 pint requires	35
1 quart requires	31¼
1 gallon requires	35

Give the table for making a 5% = 1:20 carbolic solution.

5% = 1:20—1 pint requires	36¼
1 quart requires	31½
1 gallon requires	36½

Lysol, Creolin, and Formaldehyde Solutions

What drug does lysol contain?

Lysol contains 50% of cresylic acid and tincture of green soap.

What strength of lysol solution is generally used as a disinfectant?

A one, one and a half, and a two per cent. solution.

Give the tables for making a 1%, 2%, and 5% lysol solution.

1%—1 pint requires	31¼
1 quart requires	32½
2%—1 pint requires	32½
1 quart requires	35
5%—1 gallon requires	36½

What is creolin, and its advantages?

Creolin is a drug nearly related to that of carbolic acid, and it is an antiseptic and disinfectant.

What strength of creolin solution is generally used?

The same strength as lysol.

What is formaldehyd?

It is a powerful disinfectant gas.

Mention some of the prepared solutions from formaldehyd gas.

Formalin, formolose, etc.

How much formaldehyd gas does these solutions contain?

Forty per cent.

What are the advantages of formalin?

Formalin is a germicide and a deodorant, and its action is not retarded by the presence of albuminous substances, etc.

What strength of formalin is generally used for douches?

1 pint of water requires	31½
1 quart of water requires	31

What strength of formalin is generally used as a solution for the hands?

1 pint of water requires	31
1 quart of water requires	32

Describe chinosol.

Chinosol is an antiseptic powder, of a light yellow color, and dissolves in water. It is not generally used for solutions.

What strength of chinosol is generally made?

From 1:500 to 1:2000 solutions.

Normal or physiological Salt Solution

How much salt should the normal salt solution contain?

Ninety grains to one quart of water.

What is stock salt solution?

It is a saturated solution, that is, as much salt as can be dissolved in a certain amount of water.

How would you make stock salt solution?

Dissolve $1\frac{1}{2}$ ounces of common salt—*sodium chlorid*, which has been thoroughly dried so as to granulate—in one-half pint of water; boil this vigorously for fifteen minutes, and add enough sterile water to make the required eight ounces. Filter the solution through sterile absorbent cotton, into a sterile bottle, and cork tightly.

What is the purpose of stock salt solution?

It is used for preparing a normal salt solution hastily and accurately, in case of emergency.

How would you make a normal salt solution (0.6%)?

0.6%—Stock salt solution $\frac{3}{4}$ i

Sterile water qt. 1

In absence of stock salt solution (see page 150), for making normal salt solution, etc.

Boracic Acid Solution

What form of boric, or boracic, acid solution is generally used?

The saturated solution.

What per cent. is a saturated boracic acid solution?

Four per cent.

How would you make a four per cent. boracic acid solution?

4%—1 pint requires 36
 1 quart requires 31½

The boric, or boracic, acid crystals should be placed in a sterile bottle or jar, and the required amount of sterile water should then be added; cover the bottle tightly and shake the solution vigorously until the crystals dissolve.

Various Enemata

What is an enema?

It consists of a fluid preparation used to inject into the rectum.

What are the purposes of enemata?

Enemata are given to increase the peristaltic action, and to cleanse the bowel, relieve flatulence, check diarrhea, and to administer nourishment, stimulants, etc.

What are the proper temperatures for enemata fluids?

Cleansing enemata 100° F.
 Nutritive enemata 100° F.
 Stimulating enemata 116° F.

Give formulas for various cleansing or purgative enemata?

The simple cleansing or purgative enema consists of one to four pints of soapsuds, made with castile soap and

warm water. The same amount of a saline solution is sometimes given.

1—Epsom salts (magnesium sulphate) . . .	℥i
Turpentine	℥i
Warm soap water	℥i
2—Molasses	℥8
Warm water	℥8

In order to obtain better results, follow the above injection with a soapsuds (S.S.) enema within one-half hour.

Give the formula for a glycerine enema.

Glycerine	℥ $\frac{1}{2}$ —3
Warm soapsuds	℥ $\frac{1}{2}$ —3

Give the formula for an ox-gall enema.

Ox-gall	℥ $\frac{1}{2}$
Warm water	qt. i

Give the formula for the compound ox-gall enema.

"Ox-gall	℥j (4 gm.)
Castor oil	℥iv (118 c.c.)
White of two eggs.	
Warm water	℥j 500 c.c."
	(Amanda K. Beck.)

Give the formula for a saline enema.

Epsom salts (magnesium sulphate) . . .	℥i
Hot water	℥ $2\frac{1}{2}$

Give the formula for the 1-2-3 enema.

Epsom salts	℥i
Glycerine	℥2
Hot water	℥3

Give the formula for the combination enema.

"Turpentine	℥j.
Olive oil	℥j.
White of an egg.	
Tr. Asafetida	℥j., or
Milk of asafetida	℥j.

Beat the egg well and with olive oil make an emulsion of the turpentine." (*Amanda K. Beck.*)

Give some formulas for stimulating enemata.

1—Black coffee	℥5
Brandy	℥i
2—Hot normal salt solution	℥5
Brandy	℥i

One-half pint of plain black coffee, or ten ounces of normal salt solution, is also administered for stimulating enemata.

Give some formulas for nutritive enemata.

1—Peptonized milk	℥5
White of one egg.	
Brandy	℥½
2—"Malted milk	℥ss. (15 gm.)
Somatose	℥j (4 gm.)
Water	f℥iv (118 c.c.)
Sodium chlorid	gr. xx (1.3 gr.)
White of 1 egg.	
Add peptonized milk or brandy, p.r.n."	

(*Amanda K. Beck.*)

Liquid food, such as beef tea, beef juice, broths, etc., are sometimes ordered in nutritive enemata fluids.

Rectal Feeding

Mention some of the general rules for giving rectal feedings.

Inject two to six ounces of fluid at a time. Prepare the enemata solutions so that the temperature is about 100° F. Place the patient on the left side with the knees flexed, and use a soft-rubber rectal tube. First expel all the air from the tube by allowing the solution to flow through it; lubricate the tube with sterile vaseline, or olive oil, and inject the fluid as high in the intestine as possible. In order to aid the retention of the fluid, after the removal of the rectal tube apply light pressure with a gauze compress or towel against the anus for about five minutes. A nutritive enema should not be repeated oftener than every six hours without special orders from the physician. In case the anus or rectum becomes irritated, the fact should be reported to the physician. Cleansing enemata of normal salt solution should be given daily during the period of rectal feeding of a patient.

Why should a purgative enema be given daily?

The purgative enema should be given to cleanse the bowel and allay the irritation of the mucous membrane.

CHAPTER XIX

SCOPOLAMINE-MORPHINE ANESTHESIA

THE USE OF SCOPOLAMINE-MORPHINE IN LABOR*

BY

A. J. RONGY, M.D., F.A.C.S.,

AND

S. S. ARLUCK, M.D.

"In 1906, Gauss, of Freiburg, published the results of his observations in 500 cases in which he used a combination of scopolamine hydrobromide and morphine to induce a state of semi-consciousness during labor. This mental state he termed *Dämmer Schlaf* (twilight sleep). The studies of Gauss stimulated a general interest in this subject, and very soon numerous articles from various obstetric clinics appeared. Some surgeons, chief among whom were Krönig, Zweifel, Beruti, Newell, etc., confirmed the work of Gauss, and credited to this method all that he alleged for it; others, especially Hocheisen,

* A preliminary report, based upon a study of 100 cases, with a detailed report of every tenth case observed by the attending Obstetrician, Jewish Maternity and Lebanon Hospitals, and by the Assistant Attending Surgeon, Jewish Maternity Hospital, New York.—*New York Medical Journal*, pp. 619-621. September 26, 1914.

not only denied its efficacy, but attributed to it elements of danger to both mother and child. Notwithstanding the adverse criticism brought forth, Krönig, Gauss, and their coworkers at Freiburg adopted this procedure as a routine form of treatment. In 1907 Gauss published a second article, reporting 1,000 cases, and in the spring of this year an extensive study covering a series of 5,000 cases.

In order to have a better conception of the action of these drugs, we must first differentiate between objective pain, by which we understand uterine contraction, and subjective pain, that which is experienced by the mother. Any method which has for its object the elimination of the subjective pain must under no circumstances interfere with the objective pain. The central nervous system is the seat of pain perception. Impulses are conducted to and from it. The degree of pain depends both upon the ability of the cortex of the brain to receive, and upon the nerve trunks to conduct. If by any method we are able to minimize either the perceptive power or the degree of conductivity, pain may be markedly diminished and even entirely abolished.

The action of scopolamine is chiefly upon the nervous system. It quiets the cerebrum and diminishes the perception of pain, without apparently influencing the contractility of the uterus. Labor, therefore, may progress uninterruptedly and the patient may not only fail to recollect pain, but may even be entirely unaware of it.

Clinically, the patients may be divided into three groups: 1. Patients in whom we obtain both amnesia and analgesia, that is, abolition of memory and diminution of pain; 2, patients in whom we obtain analgesia without amnesia; 3, patients who entirely fail to respond to the treatment.

In order to obtain the best possible results with this method, certain cardinal requisities must be strictly observed. It is absolutely necessary that the patient be so placed that she is free from all disturbances. A physician or nurse must be in constant attendance. The effects of the drugs should be carefully watched so that they are repeated at proper intervals. Light in the room should be so arranged that the patient is not disturbed by it. The fetal heart sounds should be carefully studied. Solutions should be obtained from reliable chemists and should be accurately standardized. They should be perfectly clear, never contain any sediment or flocculence, and should preferably be put up in ampoules, each containing the quantity required for a single injection. In instituting this method of treatment, it has been our good fortune to obtain the services of Dr. K. Schlössingk, who was one of the assistants in the clinic at Freiburg.

Technic

The treatment is begun only when the patient shows definite signs of active labor. The patient is then put to bed in a dimly lighted room and an initial dose of 0.00045 gram, or approximately $\frac{1}{160}$ grain of scopolamine hydrobromide is injected intramuscularly. This is preceded by a hypodermic injection of one-half grain of morphine-narcotine meconate.* The effects are now carefully observed with special reference to pulse, respiration, pupillary reaction, fetal heart, and intensity and frequency of uterine contractions. A secondary injec-

*The morphine was in the form of a proprietary preparation, which is chemically morphine-narcotine meconate and contains 32, 2 per cent. of the alkaloid.

tion of scopolamine is given about one hour after the first. About half an hour after this injection, memory tests are brought into play. The patient is shown some object, such as a doll or a watch, and a short while later she is asked whether she saw the particular object in question. She may be asked whether she had a hypodermic injection. Any test of memory will do. The repetition of injections is now primarily gauged by the degree of amnesia present. The interval between injections is approximately from one to one and a half hours. The average normal case requires five to seven injections, although at times it may be necessary to give only two or three, or as many as twelve or fourteen.

After the completion of the first stage, with the presenting part on the perineum, one c.c. of pituitrin is often given to hasten delivery. As soon as the child is born, the cord is quickly ligated and severed and the infant is removed to another room. The mother, after being made comfortable, generally falls into a deep sleep, to awake from two to four hours later, usually in complete ignorance of the fact that she has given birth to a child.

In this series of 100 cases in the obstetric services of the Jewish Maternity and Lebanon Hospitals, we had eighty-three per cent. in which there was amnesia with analgesia; eight per cent. in which there was analgesia without amnesia; and nine per cent. in which the treatment failed to induce the desired effect.

Oligopnea is a condition often seen in these babies, but in five to ten minutes they resume good heart action and normal respiration. Resuscitation is unnecessary, for apparently they do best when let alone. In this series eighty-one per cent. of babies cried spontaneously; sixteen per cent. had varying degrees of oligopnea; and

three per cent. were asphyxiated. The infant mortality was two per cent.; one child died from melenæ neonatorum and the other was premature with spina bifida.

Operative Procedures

In this series labor had to be artificially terminated in twelve per cent. of cases. In two cases the breech presented and delivery was accomplished by bringing down a leg. In nine cases forceps were used; of these two were median and seven low. Three were persistent occipito-posterior positions; one was a severe cardiac case, in which it was deemed advisable to terminate labor quickly; one case of nephritis with marked edema was also quickly delivered with forceps. Four cases were delivered artificially because of tedious second stage. In these last mentioned cases the perineum was bulging, with caput showing and practically all that was necessary was extension of the head with the forceps blades. The instruments were then removed and the woman allowed to deliver spontaneously.

Anesthetics.—Ether was the anesthetic used where artificial delivery was performed. The patients were quickly narcotized, taking the ether very readily and consuming only small quantities of it.

Post-partum hemorrhage.—We have seen no excessive bleeding in any of our cases.

Convalescence.—It is interesting to note how little these patients are physically affected by labor. The exhaustion that usually accompanies labor in primiparæ is entirely eliminated.

We shall now briefly report every tenth* case of this

* Only four cases are cited in this extract as follows: Cases I, L, LXX, and XC.

series in order more fully to illustrate the technic followed.

Case I.—Mrs. E. K., aged twenty-five years, para-III, admitted in labor, June 16, 1914. Cervix three fingers dilated, head unengaged, membranes ruptured, cervix thick.

First injection, 6.30 P.M., scopolamine, grain $\frac{1}{160}$, morphine, grain one-sixth; restlessness quite marked. Second injection, 9.30 P.M., scopolamine, grain $\frac{1}{400}$, morphine, grain one-sixth; still quite restless; pulse 108, color normal, respiration 28; fetal heart 140; frequency of pains, three minutes; duration of pains one-half minute. Third injection, 10.55 P.M., scopolamine, grain $\frac{1}{400}$.

Patient delivered spontaneously 11.22 P.M., oligopnea of child lasting three minutes. Placenta expelled spontaneously. Mother very restless, had to be held down during pains. Condition, following day, good. Case only partially successful. Mother did not recollect the time of birth of the child, but remembered having had pain.

Result: Amnesia without analgesia.

Case L.—Mrs. S. K., aged twenty-three years, para-I, admitted July 21, 1914; cervix three-quarters dilated, head engaged, membranes intact; pulse, 92; respirations normal; fetal heart, 154.

First injection, 12.50 P.M., scopolamine, grain $\frac{1}{160}$ and morphine-narcotine meconate, grain one-half; pulse, 80; respirations 26, face flushed, pains every five minutes, lasting one-half minute; fetal heart, 154. Second injection, 1.40 P.M., scopolamine, grain $\frac{1}{400}$. Condition remained about the same, patient moderately quiet. Third injection, 2 P.M., scopolamine, grain $\frac{1}{400}$.

Patient delivered of normal child, 2.25 P.M.

Result: Amnesia with moderate analgesia.

Case LXX.—Mrs. A. N., aged twenty-three years, para-I, admitted August 2, 1914; cervix two-thirds dilated, head engaged, membranes intact; pulse 60, color normal, respirations 24; pains every five minutes, duration three-quarter minute.

First injection, 9.45 A.M., scopolamine, grain $\frac{1}{60}$, and morphine-narcotine meconate, grain one-half; pulse 60, color normal, respirations normal; fetal heart 140; patient quiet. Second injection, 11.25 A.M., scopolamine, grain $\frac{1}{400}$; face flushed, otherwise general condition unchanged. Third injection, 12.05 P.M., scopolamine, grain $\frac{1}{400}$. Fourth injection, 12.45 P.M., scopolamine, grain $\frac{1}{400}$. Fifth injection, 2 P.M., scopolamine, grain $\frac{1}{400}$. Sixth injection, 2.45 P.M., scopolamine, grain $\frac{1}{400}$. At 3.20 P.M. there was a second injection of morphine-narcotine meconate, grain one-half, and at 3.30 P.M. one c.c. of pituitrin was injected.

Patient delivered with forceps, 5.45 P.M., occipito-posterior position; oligopnea, lasting only a few minutes.

Result: Complete amnesia with analgesia.

Case XC.—Mrs. P. M., aged twenty-five years, para-II, admitted August 16, 1914; cervix four fingers dilated, head engaged, membranes intact, cervix thick; pulse 102, color normal, respirations 22; fetal heart 134; pains every five minutes, duration one-half minute.

First injection, 9.20 P.M., scopolamine grain $\frac{1}{60}$, and morphine-narcotine meconate grain one-half; pulse 88, face flushed, fetal heart, 134; pains every three minutes, duration one-half minute; patient quiet. Second injection, 10.10 P.M., scopolamine, grain $\frac{1}{400}$; pulse 88, face flushed; pains every three minutes, duration one-half minute; patient quiet. Third injection, 11.55 P.M., scopolamine, grain $\frac{1}{400}$; pulse 88, face flushed; pains

every two minutes, duration one-half minute. Fourth injection, 1 A.M., scopolamine, grain $\frac{1}{400}$.

Patient delivered of normal child, 1.15 A.M.

Result: Amnesia with analgesia.

Conclusions

Standard solutions are absolutely essential to the success of this treatment. The facilities should be such that the patient is not unduly disturbed. The treatment does not affect the first stage of labor, but the second stage is somewhat prolonged. Pain is markedly diminished in all cases, while amnesia is present in the greatest number of patients. This treatment does not in any way interfere with any other therapeutic measures which may be deemed necessary for the termination of labor. The fetal heart sounds must be carefully watched; sudden slowing calls for immediate delivery when possible or the discontinuance of the treatment. Oligopnea, sometimes present, produces no ill effects, for the babies quickly resume normal respiration and good heart action. We have noticed no excessive hemorrhage under this form of treatment.

Finally, judging from our observations and experiences, we feel that this method of treatment should be given a fair trial. It is only the varied experience of competent men that will tend to settle this extremely interesting subject. It is the duty of the medical profession to set the public aright on this very important question. For our part, we believe that this mode of treatment relieves the woman of the agonies of labor and in addition instills a feeling of confidence which materially aids her in passing through the trying ordeal."

*Morphine Scopolamine Anesthesia **

"A second thoroughly *ex parte* account of the Freiburg method of morphine scopolamine anesthesia in childbirth appears in *McClure's* for October (1914).

We have the privilege of presenting in this issue of the *Journal* (September 26, 1914), the first formal report of the new method in America, carried out precisely as advised by Herron Krönig and Gauss and with the same vehicles for the alkaloids. It is important to note that the proprietary preparation referred to contains only 32.2 per cent. morphine, therefore the half grain usually exhibited represents less than one-sixth grain of the alkaloid; not improbably the narcotine might be omitted. The subsequent use of the pituitrin seems to be a characteristic American improvement, an invitation to Nature to "step lively"; without pituitrin, the second stage of labor is unduly prolonged.

It is interesting to learn that Doctor Rongy and Doctor Arluck conclude that morphine scopolamine relieves agony and instils confidence in the mother, and that it deserves further trial; it is an anesthetic pure and simple. The mortality, two per cent., would have been the same without the drugs. The oligopnea of the infants seems to be unimportant; and three asphyxiated babies recovered. It is significant that ether is required in addition to the alkaloids when forceps are used.

Of importance, however, in the face of the triumphant lay hymning of this method, are the nine per cent. of mothers in whom the method failed of effect. This percentage, we fear, is likely to be larger when labor takes place without the ideal surroundings of the hospital.

* *New York Medical Journal*, Editorial Articles, pp. 629-630. September 26, 1914.

If nine per cent. of mothers are doomed to continue to bring forth their children in sorrow, we may count upon an energetic antistrophe from this part of the chorus that will ring in the ears of some now exultant reporters. It is only fair to state, however, that the authors of the communication in this issue and their assistants believe that the puzzling lack of analgesia and the cessation of labor pains were due to improperly prepared solutions of scopolamine. No such drawbacks seem to have been experienced after the use of stable, sterilized solutions put up in ampoules. Trials are now being made with hyoscine hydrobromide instead of scopolamine; and it may well be that with a few more clever American improvements—like the great saving of time already secured—we shall have a workable anesthetic technic of inestimable value in a large number of cases."

CHAPTER XX

NITROUS OXID GAS-OXYGEN ANESTHESIA

Nitrous oxid gas-oxygen anesthesia in obstetrics, according to several physicians,* is an improvement over the scopolamine and morphine method. It is considered safer, favors a natural birth, and is said to be harmless to both the mother and child. It is employed in many of the large hospitals both in New York and other large cities in the United States. The mother is rational throughout labor, but she is insensible to pain during the administration of the gas. It is less expensive and can be used both in private houses and in hospitals.

E. R. Fiske, M.D., and W. H. Abbott, M.D., of Greater New York, consider nitrous oxid gas anesthesia absolutely safe, and that it takes the place of ether and chloroform. It may be used in any case, whether complicated or not, and may also be used with hysterical or nervous patients, during labor. The drugs employed in the "twilight sleep" method are limited more or less to normal cases.

In order to produce analgesia in obstetrics with nitrous oxid gas-oxygen, it is necessary to have a machine that is easily controlled so as to obtain quick effects from the gas administered and to economize in its use. It

*H. C. Allen, M.D., of The Cumberland Street Hospital, Brooklyn, New York, has done a great deal during the last year to demonstrate the efficiency of gas-oxygen analgesia in obstetrics, and has called the attention of the profession to its advantages.

is also necessary to carefully study the effect of the analgesia on each individual patient, so as to know how quickly it will act, the percentage of the mixture required, how much to administer, and when to shut it off. These facts having been determined, and if the patient follows the physician's instructions exactly, the results are very satisfactory.

Upon the first signs of contraction of the abdominal muscles, or at the beginning of the pain, the nitrous oxid and oxygen should be turned on at once. The machine should be one in which the percentage of mixture can be kept constant, and the combined gases turned on instantly. This method can be continued over a period of about four hours with perfect safety. It is advisable to keep the mucous membrane of the nose and throat well lubricated with benzoinate oil, or liquid albolene, which may be sprayed, or dropped through the nose with a medicine dropper.

The combination of narcophin and scopolamine during the first stage of labor, and of nitrous oxid and oxygen during the second stage has produced the most satisfactory results in many cases. These combined methods have been used to a considerable extent in the Prospect Heights Hospital in Brooklyn, New York.

Dr. J. Clarence Webster,* of Chicago, who has used nitrous oxid gas analgesia more or less for ten years says: "From our experience in the Presbyterian Hospital (Chicago), this method is recommended as the safest and simplest method of conducting labor.

Its advantages are as follows:

- I. The apparatus is simple, easily transported, and may be used by any practitioner.

* J. Clarence Webster, M.D., *Journal of the American Medical Association*, pp. 812-813. March 6, 1915.

2. Deep anesthesia is not necessary.
3. There is no ill effect to mother or child.
4. The strength of uterine contractions are not diminished, no matter how long the administration of the nitrous oxid gas is continued.

5. The administration is under control all the time, and can be stopped at any moment. This is a very decided advantage which is not possessed by any method which necessitates placing a patient under the influence of drugs administered internally.

The administration is begun when the patient complains of the second stage pains, though it may also be used during the first stage. . . . The apparatus is that ordinarily employed by dentists.

It has been found best to use a small nasal inhaler, the mouth of the patient being uncovered. The gas attached to the tank is kept under low pressure, and as the pain begins the patient is instructed to breathe quietly, keeping her mouth closed. Ordinarily, light inhalations suffice to produce the analgesia effect. It is not necessary to cause asphyxiation or jactitation, which are due to the inhalations of large quantities of gas. Expulsive efforts on the part of the patient are not interrupted to any appreciable extent. As soon as the uterine contractions begin to subside, the inhaler is removed and the patient is again conscious. This procedure may be kept up for hours if necessary.

Pure nitrous oxid gas, or gas with oxygen (3 per cent.) may be employed, the former is perhaps most universally applicable. It may be used in private houses as well as in hospitals."

Dr. Frank W. Lynch,* of Chicago, also says: "Since

*Frank W. Lynch, M.D., *Journal of the American Medical Association*, p. 813. March 6, 1915,

July, 1913, I have used gas for long continued analgesia in my obstetric work. . . . The result obtained by this new method has been astonishing. It is the most volatile of anesthetics, acts most quickly, and its effects pass away most rapidly. It is practically free from danger even when continued for analgesia of many hours.

"Any gas machine with a Hewett stopcock, permitting the admixture of oxygen, and gas will do. I use a small portable machine which holds four tanks. The best results are obtained with a nose-piece such as used by dentists, but the ordinary mouth-piece will answer. I have hitherto started the treatment when the pains have become severe enough to occasion complaint. Pure nitrous oxid is turned on full at the beginning of the pain, and the patient is told to breathe deeply but rapidly through the nose. Five or six respirations suffice to produce analgesia, even in the presence of the uterine contractions. The nose-piece is now placed over the mouth. The patient is told to breathe through the mouth, and analgesia is maintained by admixing oxygen with gas until the end of the pain. . . . The percentage of oxygen varies from nothing to ten per cent. . . . When the head distends the perineum, the anesthesia is carried to the surgical degree, and the color of the patient is controlled with oxygen. Separate tanks of oxygen are the best, and cheapest."

ABBREVIATIONS

ABBREVIATIONS.	LATIN.	ENGLISH.
āā	āvā = each	Equal parts of each.
A. c.	Ante cibum	Before meals.
Add.	Adde	Add to it.
Ad. lib.....	Ad libitum	As you please.
Alt. dieb.....	Alternis diebus ...	Every other day.
Alt. hor.....	Alternis horis ...	Every other hour.
Alt. noc.....	Alternâ nocte ...	Every other night.
Ante.	Anterius	Before.
Ante cib.....	Ante cibum	Before meals.
Applic.	Applicatur	Apply.
Aq.	Aqua	Water.
Aq. font.....	Aqua fontana ...	Spring water.
Aq. bull.....	Aqua bulliens ...	Boiling water.
Aq. dest.....	Aqua destillata ...	Distilled water.
Aq. marin.....	Aqua marina	Sea-water.
Aq. pluvial.....	Aqua pluvialis ...	Rain-water.
Aq. pur.....	Aqua pura	Pure water.
Bis hor.....	Bis horis	Every two hours.
Bis ind.....	Bis in die	Twice a day.
Bull.	Bulliat	Let it boil.
C., or Cong.....	Congius	A gallon.
c.c.	Centimeter cubi-	
	cum	Cubic centimeter.
c.	Cum	With.
Cap.	Capiat	Let him take.
Caps.	Capsula	A capsule.
Cochleat.	Cochleatim	By spoonfuls.
Cochl.	Cochleare	Spoonful.
Coch. mag.....	Cochlear magnum.	A tablespoon.
Coch. med.....	Cochlear medium.	A dessertspoon.
Coch. parv.....	Cochlear parvum.	A teaspoon.
Comp.	Compositum	Compound.
Conf.	Confectio	A confection.
Cuj.	Cujus	Of which.

ABBREVIATIONS.	LATIN.	ENGLISH.
Decoct. hord.....	Decoctum hordei..	Barley-water.
Decub.	Decubitus	A bed; lying down.
Destil.	Destilla	Distil.
Det.	Detur	Let 'it be given.
Dil.	Dilutum	Dilute.
Dim.	Dimidium	One-half.
Div.	Divide	Separate in one-half.
Div. in p. æq.....	Dividatur in partes æquales	Divide into equal parts.
Drachm or dr.....	Drachma	A dram.
Duo	Duo	Two.
Emp.	Emplastrum	A plaster.
Enem.	Enema	A rectal injection.
Extr.	Extractum	An extract.
F.		Degree of heat ac- cording to Fahren- heit.
F. mist.....	Fiat mistura	Make a mixture.
Far.		Faradic.
Fe.	Ferrum	Iron.
Filt.	Filtra	Filter.
F. pil.....	Fiat pilula	Make a pill.
Fot.	Fotus	A fomentation.
Freq.	Frequenter	Frequently.
Fl. or f.....	Fluidum	Fluid.
Ft.	Fiat	Let there be made.
F℥	Fluidrachma	Fluidram.
F℥	Fluiduncia	Fluidounce.
Garg.	Gargarisma	A gargle.
Gm.	Gramme (<i>French</i>)	In metric weight.
Gossyp.	Gossypium	Cotton-wool.
Gr.	Granum	A grain, or grains.
Gtt.	Gutta	A drop; <i>Guttæ</i> , drops.
Guttat.	Guttatim	By drops.

ABBREVIATIONS.	LATIN.	ENGLISH.
H.	Hora	An hour.
Hg.	Hydrargyrum	Mercury.
Hirud.	Hirudines	Leeches.
Hor. decub.	Hora decubitûs	At bedtime.
Id.	Idem	The same.
I.e.	Id est	That is.
In d.	In die	Daily.
Inf.	Infusum	An infusion.
Inject.	Injectio	An injection.
Lat. dol.	Lateri dolenti	To the affected side.
L.	Litre (<i>French</i>) ...	A liter.
Lb.	Libra	A pound.
Lib. or lbs.	Libræ	Pounds.
Lim.	Limones	Lemons.
Liq.	Liquor	A solution.
Lot.	Lotio	A lotion.
M.	Misce	Mix.
M.	Minimum	A minim.
Mac.	Macera	Macerate.
Man.	Manipulus	A handful.
Mass. pil.	Massa pilularum ..	Pill-mass.
Mel.	Mellitum	Honey.
Mist.	Mistura	A mixture.
N.B.	Nota bene	Note well ; take notice.
No.	Numero	In number.
Noct.	Nocte	At night.
O.	Octarius	A pint.
Ol.	Oleum	Oil.
O.M.	Omni mane	Every morning.
Ov.	Ovum	An egg.
Oz.	Uncia	An ounce.

ABBREVIATIONS.	LATIN.	ENGLISH.
P. or Pug.....	Pugillus	A pinch.
P. c.	Post cibum	After meals.
Pil.	Pilula	A pill.
Post.	Posterior	After, behind.
Pt.		Pint = a pint measure.
P.R.N.	Pro re nata	As occasion arises.
Pulv.	Pulvis	A powder.
Q.d.	Quater in die.....	Four times a day.
Q.P.	Quantum placet...	As much as please.
Q.S.	Quantum sufficit..	As much as sufficient.
Qt.		Quart = a quart measure.
Quotid.	Quotidie	Every day.
Q.V.	Quantum vis	As much as wish.
R.	Recipe	Take.
S. or Sig.....	Signa	Write (Label).
Sol.	Solutio	A solution.
Spr.	Spiritus	Spirit.
Sp. gr.....		Specific gravity.
SS. or s.....	Semissis	One half.
S. O. S.	Si opus sit	If necessary.
Sum.	Sumendum	To be taken.
S.F.	Spiritus frumenti.	Whiskey.
S.V.G.	Spiritus vini gallici.	Brandy.
S.V.R.	Spiritus vini recti- ficatus	Alcohol.
T.i.d.	Ter in die.....	Three times a day.
Tr., Tinct.	Tinctura	A tincture.
Ung.	Unguentum	An ointment.

COMMON SYMBOLS, ETC.

P.R.T. = Pulse, Respiration, and Temperature.

Q-2-h or 2 dis = Every two hours.

Q-3-h or 3 tiis = Every three hours.

Q-4-h or 4 tiis = Every four hours, etc.

One dram = $\mathfrak{z}i$, or one teaspoonful.

One ounce = $\mathfrak{z}i$, or two tablespoonfuls.

One scruple = $\mathfrak{D}i$ = 20 grains.

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